BUSINESS SCREEN

A REPORT ON THE TRAINING FILM
PROGRAM OF THE UNITED STATES NAVY

ISSUE 5 • 1945 • OF THE NATIONAL MAGAZINE OF AUDIO AND VISUAL AIDS

"Guts", they call it in men . . . and "guts" goes for machines, too! In rain, mud, snow and ice . . . VICTOR can take it. Letters from G. I.'s and Navy men the world over attest this. One letter specifically states, "Victor is the one projector that can take the beating." Such performance and stamina isn't just happenstance . . . It's the result of 22 years' experience. Victor started to build "guts" into its 16mm equipment on that day when A. F. Victor produced the first Victor projector and led the way in its practical application for teaching in schools and churches . . . speeding production in Industry and training and entertaining the Navy and Military. Yes, Victor Equipment is truly 16mm Magic!

Invest In Victory — Buy More War Bonds

Victor — Pat. U.S. Pat. Off. — 16 — Sight Sound Sequence

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Navy Training Also Sets the Pattern for More Resultful Selling When War is Ended

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THE FOLLOWING FILMS, for general release, reflect new techniques in training. You are invited to see these Caravel productions:

U. S. Navy Films

Dealing with the Dissatisfied Employee . . . Budgeting Time and Effort . . . Developing Cooperation . . . Building Morale . . . Creating Job Interest.

U. S. Office of Education Films

A New Supervisor Takes a Look at His Job . . . Introducing The New Worker to His Job . . . Instructing The New Worker . . . Placing the Right Man on the Job . . . Supervising Workers on the Job . . . Maintaining Workers' Interest . . . The Supervisor as a Leader, Part I . . . The Supervisor as a Leader, Part II. Employing Blind Workers in Industry . . . Instructing the Blind Worker on the Job.

ONE OF THE GREAT TRIUMPHS of this war is witnessed in the speed and precision with which the United States Navy has transformed raw recruits into highly efficient fighting men. The problem called for a swift, sure training program to convey impressions VIVIDLY—and make them STICK. The Navy met it superlatively well.

Much the same problem, as it seems to us, will shortly be facing the Sales Managers of American Business.

They, too, must initiate RESULTFUL Training Programs, if they are to do their part in providing worthwhile opportunities for returning veterans . . .

—And in equipping these men to sell and merchandise SUCCESSFULLY the tremendous volume of goods whose production is vital to America's continuing prosperity.

Over a period of twenty years—while America was still at peace—it was our privilege to develop a great many sales-training programs that accomplished for our clients just what the Navy has since accomplished on a vastly greater scale . . .

These programs shortened by weeks and months the period of training, and equipped large groups of men to perform their tasks in more RESULTFUL ways.

We are proud to have shared in the production of training films for the United States Navy. We have learned many things that will help us serve you all the better—when the war is ended.

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Incorporated
7510 NORTH ASHLAND AVENUE, CHICAGO 26

May, 15, 1945

MEMO: To Navy Training Film Branch

Ever since you assigned us our first project a few weeks after Pearl Harbor, your Training Film program has been our big production job.

That first project was Training Film No. 16 ... a long way back, as training films go.

Since then, we've devoted our entire organization to the job of producing 47 sound motion pictures for you.

In addition, our laboratory has processed more than 28,000,000 feet of release prints for the Army and the Navy.

We're happy to have been able to do our part in this greatest training project ever attempted.

Sincerely yours,

BURTON HOLMES FILMS, INC.

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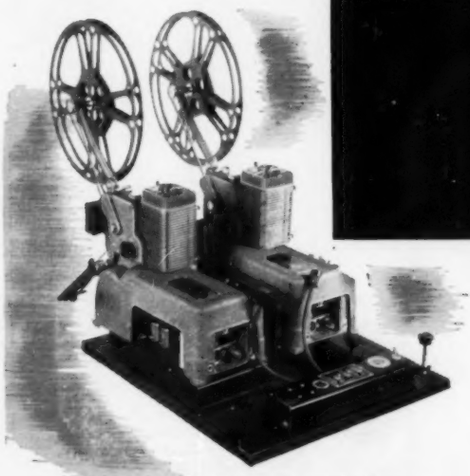
A SALUTE TO THE NAVY

Dual Ampro-sound projectors form an important part of the Gunnery Training Unit developed with Jam Handy. *(Official U.S. Navy Photograph)*



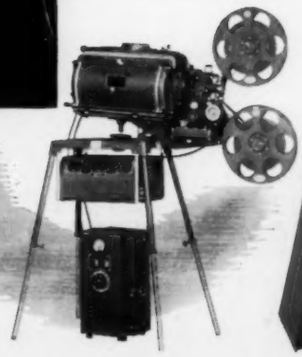
Close-up of the dual Ampro-sound 16 mm. projector unit used in the U. S. Navy Gunnery Training Unit.

for its effective use of modern audio visual aids

The Navy has utilized 16 mm. sound films with outstanding skill and thoroughness to meet the urgent needs of a gigantic training program. The transmission of skills and "know-how," speeding up of orientation, maintenance of morale, gunnery training under simulated battle conditions—all these were made possible on a mass basis by the effective adaptation of visual aids as this special issue of Business Screen so dramatically proves.

Naturally, Ampro is happy that its projectors were able to fit in so completely with the Navy training program . . . particularly in the gunnery training units . . . and that Ampro units were able to meet the stiff requirements of the Navy testing laboratories. Today, every branch of the Navy, Marine Corps and Coast Guard is utilizing Ampro-sound projectors in one capacity or another. In addition, Ampro 16 mm. sound projectors are being used in large numbers by *all* branches of the U. S. armed forces—for training and entertainment in all parts of the world. Out of this world-wide testing laboratory are emerging the new post-war Ampros—ready to help in the huge task of reconversion and reconstruction.

Another Ampro 16 mm. duo-unit typical of those used in "special services" overseas as part of the Army's "J" Kit.



Ampro-arc 16 mm. projectors used by the armed services.

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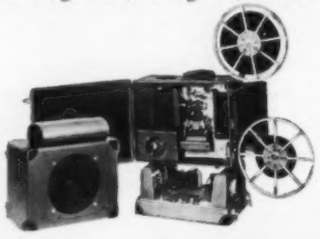
with your NEW DEVRY you SEE IT! ... HEAR IT! reproduced "NATURE REAL"

When you look to the magic of sight, sound and motion to train, to teach, or entertain—you want reality on the screen and out of the sound system. Whether it be speech, song, instrumental music, or sound effect you demand the utmost. . . . Of this you are assured with the new simple-to-operate DEVRY 16mm. Sound-on-Film Projector:

The clearest of black and white detail . . . the splendor of natural color . . . full brilliance . . . rock steady . . . kind to the eyes . . . "nature-real."

The ultimate of sound, whether it be crisp, clear, intelligible conversation . . . a bird call at sunset, roar of a tempest . . . full majesty of symphonic music from the highest notes of the violin to the deepest tones of the bassoon.

The miracle of the *new* DEVRY is that it brings to auditorium, classroom, conference room—or to your own home—theater standards of performance . . . built into DEVRY 16mm. equipment by craftsmen who build 35mm. projectors and sound systems for better theaters all over the world . . . Ask your DEVRY dealer—or write DEVRY CORPORATION, 1111 Armitage Ave., Chicago 14, Illinois.



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U. S. NAVY PHOTO

PUNCH.... *and Judy*

WHEN NAVY GUNS ROAR, the pulse of every red-blooded American quickens. But an *extra* thrill comes to Judy... representative of the millions of women and men who turn out the critical war materials that give our Navy its devastating PUNCH!

To inspire these war workers to greater effort in producing vitally needed materials, the Navy has created and released many 16 M.M. "incentive" motion pictures for screening to vast war worker audiences.

Because of its quarter-of-a-century's success in getting industrial films shown throughout the country, Castle Distributors Corporation was selected by the Navy to distribute these "incentive" pictures . . . to see that "Judy" got their message.

It was a big job, resulting in thousands of showings in 19 states, but results have proved its tremendous value to the Navy's war program. So, we're proud too . . . along with Judy and her fellow workers . . . in being privileged to help speed our Navy to victory.

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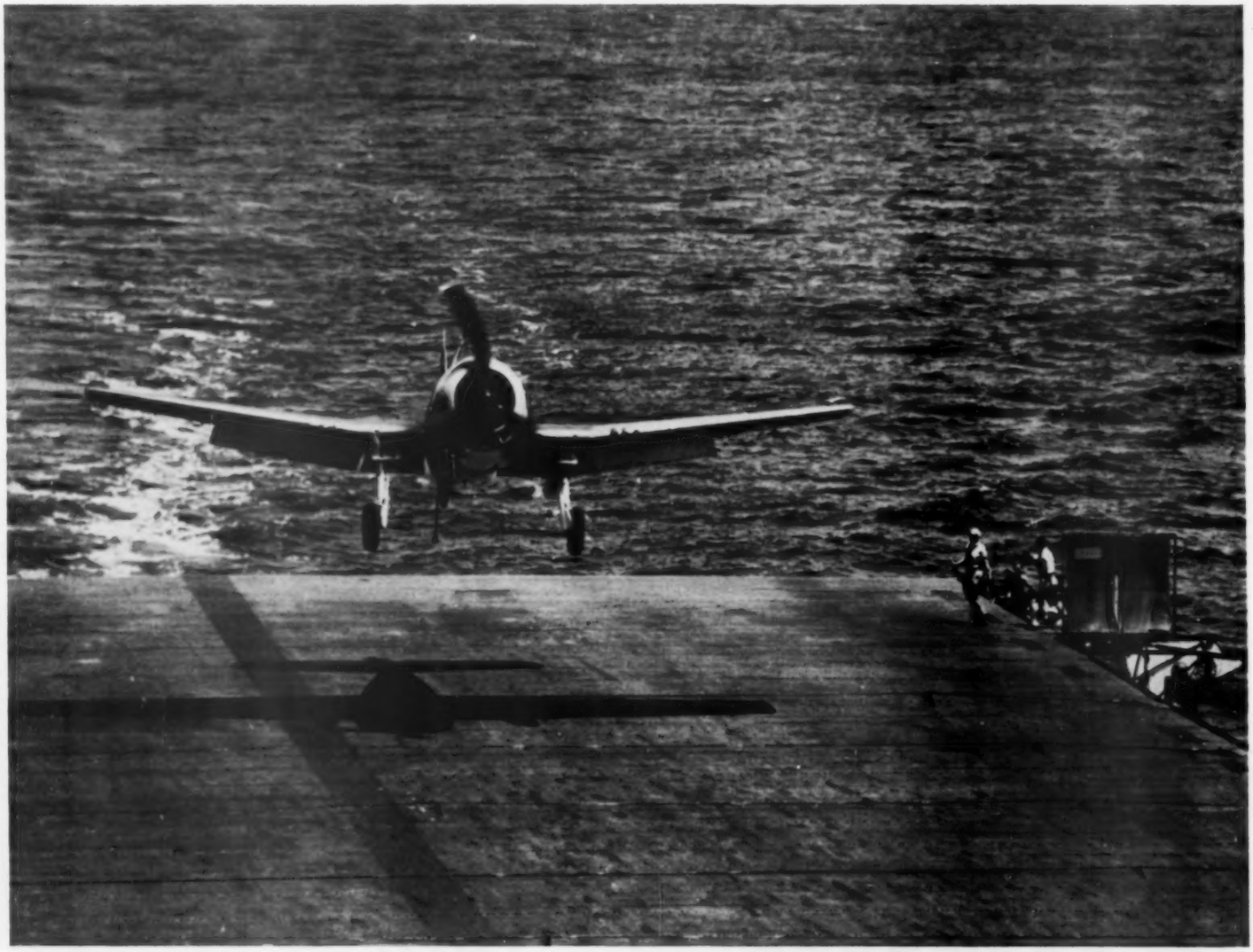


Navy Hellcat lands on deck of carrier in a Pacific Fleet task force after return from an attack. Scenes like this, in color and motion on Navy training films, help to turn out more efficient fighting men in less time. (*Official U.S. Navy photograph.*)

A word about swords and plowshares

TODAY, the motion picture is a tool of war—working for a *free* America . . .

Tomorrow, it will again be a tool of peace—working for a *prosperous* America, by selling more goods to build more jobs.

For the modern motion picture is a *versatile* tool—a medium that educates, persuades, enlightens . . . rapidly and effectively.

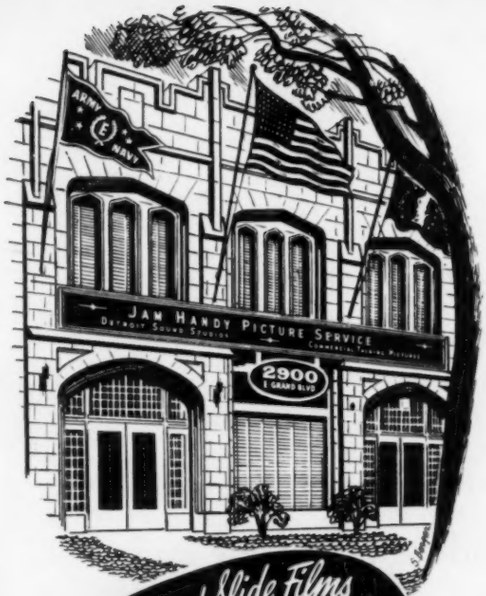
Any motion picture can do this. But a *color* motion picture, with all the *living realism* of Ansco Color Film, does it best of all!

Today, the U. S. Navy and other American armed forces are using most of the 16mm Ansco Color Film—as well, of course, as Ansco black-and-white. They are using these films outstandingly well. The Navy's instructional films represent a great job, well done.

With victory, ever-increasing quantities of Ansco Color Film will be available to *you*. Plan to make fullest possible use of the *living* color qualities of this remarkable material—you'll find it more effective and versatile than anything you've seen before! **Ansco, Binghamton, New York.** A Division of General Aniline & Film Corporation.

Ansco

MOTION PICTURE FILMS



Motion Pictures and Slide Films

Training the Trainer

Special Training Devices

Fifth Award for Each of Three Plants

JAM HANDY

Devoted to the training requirements of some of America's most progressive companies with whose confidences we have been entrusted for periods of many years, and skilled in keeping confidential information under cover the Jam Handy Organization was well prepared by previous scientific and industrial experience to function as an auxiliary to the Navy Training Film and Motion Picture Branch, producing pictures right and right on time.

NO CIVILIAN, we believe, if he compares his efforts with those of the men and women in uniform, can honestly solicit nor gracefully accept any more commendation for the part he has played in the vast business of supplying tools of war than that traditionally terse and salty phrase, "Well done," So we of Wilding Pictures whose names appear here gratefully accept this opportunity to express our thanks for wise counsel, unfailing patience and enthusiastic co-operation to the officers and men of the United States Navy with whom we have been working so closely during the past four years.

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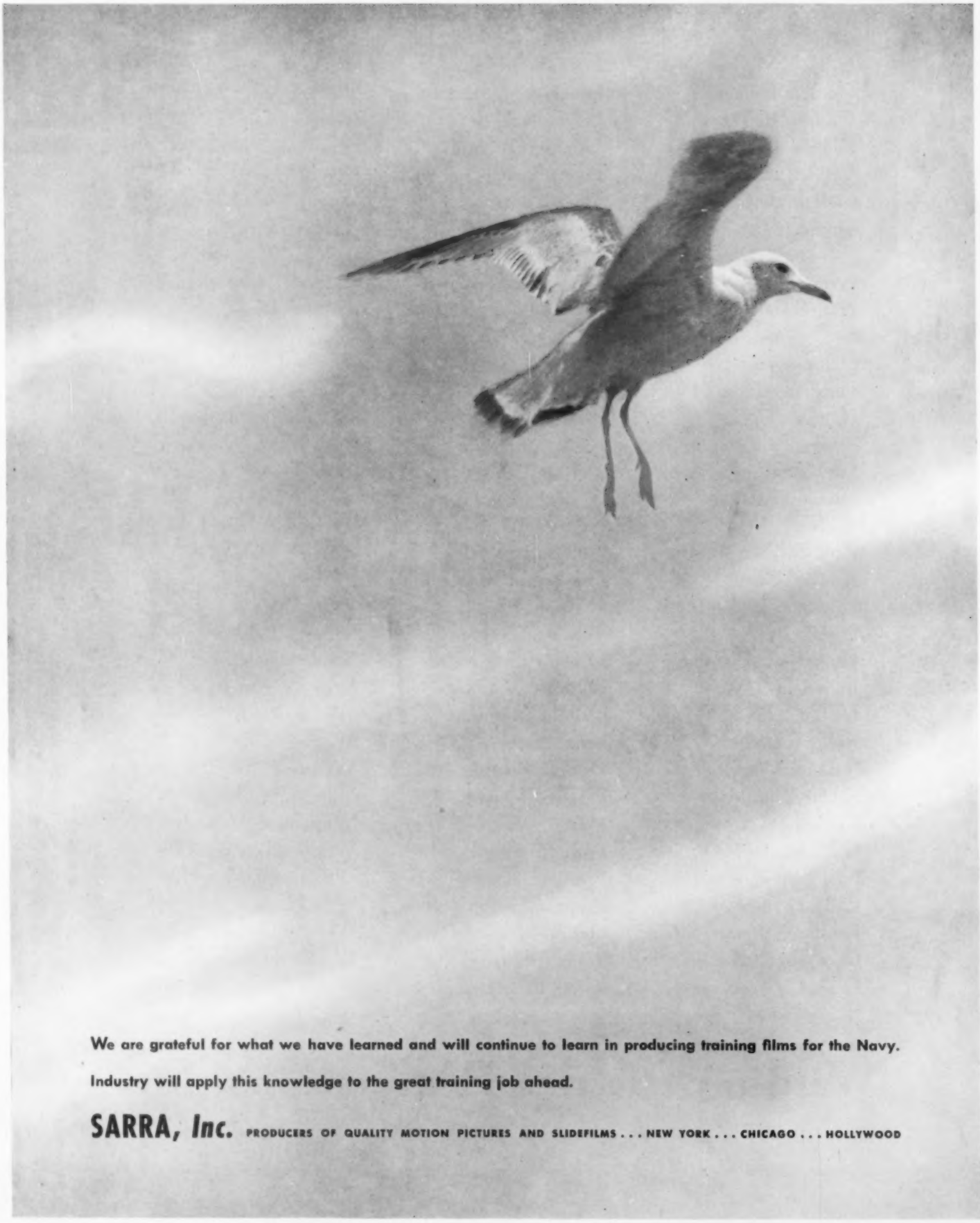

We are grateful for what we have learned and will continue to learn in producing training films for the Navy.

Industry will apply this knowledge to the great training job ahead.

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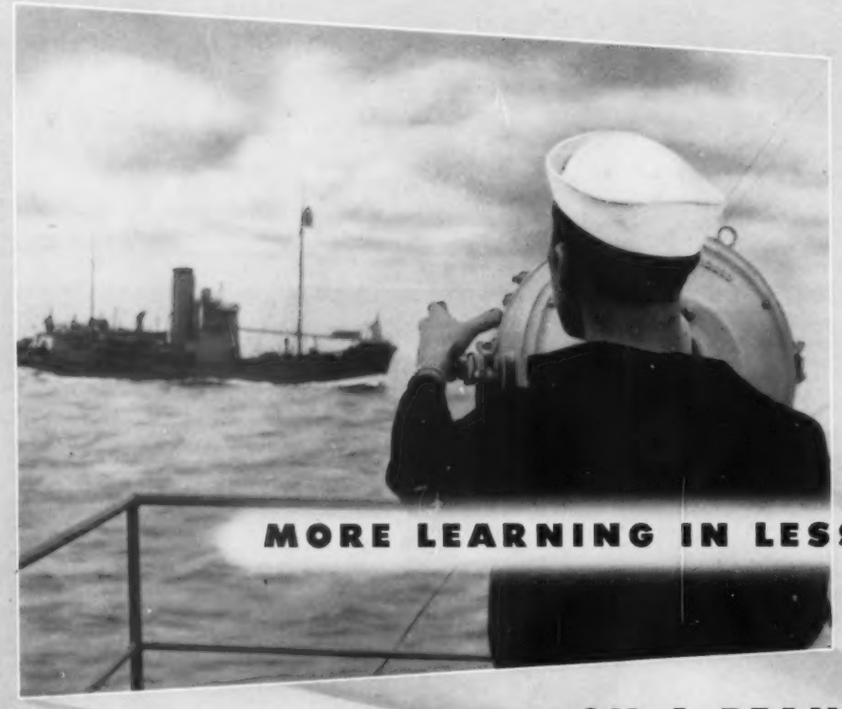

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...ON A BEAM OF LIGHT

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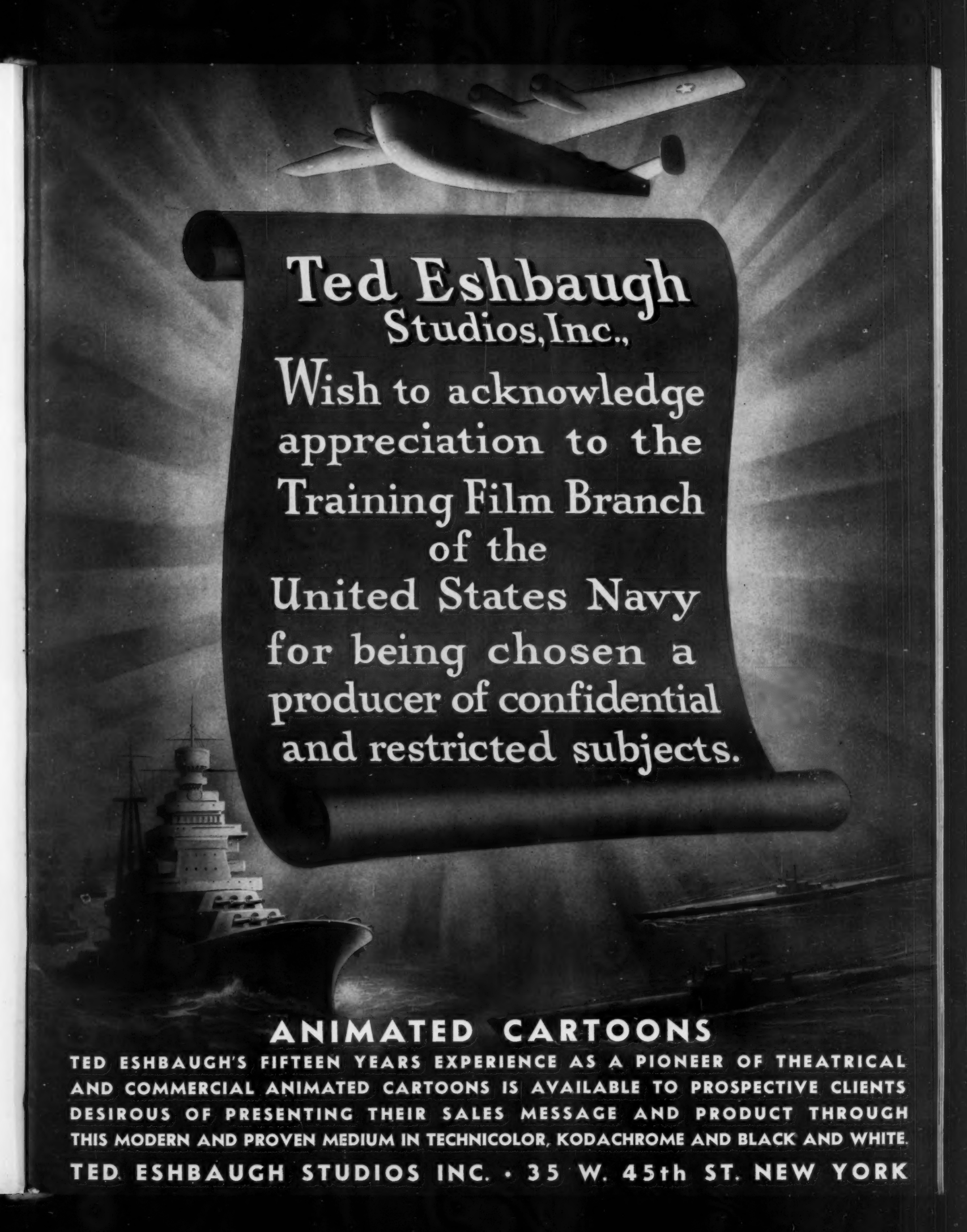


ANIMATED CARTOONS

TED ESHBAUGH'S FIFTEEN YEARS EXPERIENCE AS A PIONEER OF THEATRICAL AND COMMERCIAL ANIMATED CARTOONS IS AVAILABLE TO PROSPECTIVE CLIENTS DESIROUS OF PRESENTING THEIR SALES MESSAGE AND PRODUCT THROUGH THIS MODERN AND PROVEN MEDIUM IN TECHNICOLOR, KODACHROME AND BLACK AND WHITE.

TED ESHBAUGH STUDIOS INC. • 35 W. 45th ST. NEW YORK

The Men of Navy Training Films

THE officers and men of Navy Training Films are in a very real sense the editors of this special report. To them has been provided this means of bringing to you in education, industry, government and the visual industry, this first authoritative report on lessons learned and to be learned in a great laboratory of wartime experience.

Real achievement in organization and techniques, shared alike by the men of Navy and those who served them as producers, must remain unsung. Pages of testimony on the success of training films in the war must remain sealed in the interest of national security. Few titles of current Navy training films will thus appear in the pages of this report.

It would be altogether fitting to list in these columns the names of those hundreds of officers, enlisted personnel and civilians now serving in the many phases of this great training program. Somewhere soon such a roster will be presented on their behalf. But as they remain anonymous here, the thousands of training films they have produced and their effective contribution to the training needs of our victorious forces, will speak for them. In Washington, at Arlington and Anacostia, in Hollywood, New York and in the field wherever our Navy fights or trains to fight, the men and women of training films are writing and filming a record of achievement in this field which is beyond mere words.

Do it better this time—that spirit of constant improvement and critical appraisal as well as unsparing use of the most efficient facilities available throughout the U. S., has made each new film series a standout for quality and good training results. This speaks volumes for the able and enthusiastic leaders who have inspired their co-workers through these trying years of war. It is evident throughout the twenty-nine articles in the pages of this report.

For months before Pearl Harbor, far-sighted Americans were helping lay the foundations for this great program; on that fateful day began the swift expansion of our forces and of our training needs which this program has helped to meet. In these war years, production for the needs of war—to shorten time, to save lives—*to serve the fleet has been the sole objective. Results,* not experimentation, has been the changeless order of the day. Yet through all the hours and days of getting training films out there has been a constant determination to find the *knowns,* to prove the facts and to eliminate the guesswork.

This is a report on the Training Film Program of the United States Navy. It is *a wartime report on a vital program in being,* made as complete as anything yet attempted in the modern history of the audio-visual medium of which we are all a part. *It is our proud privilege to bring it to you.*

—OHC

★ **Business Screen Magazine** ★

Issue Five of Volume Number Six • June • 1945

Issue Five, Volume Six of Business Screen, the National Magazine of Audio and Visual Aids, issued by Business Screen Magazines, Inc., 157 East Erie Street, Chicago 11, Illinois on June 10, 1945. O. H. Coeln, Jr., Editor and Publisher; E. T. Lundgren, Jr., Director of Production; Eve Erickson, Rosemary Kemp, Editorial Assistants. Staff members in service: Lt. Robert Seymour, Jr., Sgt. Herbert L. Mitchell. Subscription: $2.00 for eight consecutive numbers (one complete volume); $3.00 foreign; $3.50 in Canada. Entire contents copyright 1945 by Business Screen Magazines, Inc. Trademark Reg. U. S. Patent Office.

★ As this report on Navy Training Films goes to press, Rear Admiral Dewitt Clinton Ramsey, USN, until late in May the Chief of the Bureau of Aeronautics, has been detached for other duty. Under his inspired leadership during the past year, the Bureau has advanced an already notable record of wartime service. As Chief, Admiral Ramsey was charged with the responsibility for the design, test, procurement, production and maintenance of naval aircraft and aeronautical material. The Training Film and Motion Picture Branch under the Director of Photography in the Bureau is responsible for training films used throughout the fleet.

Admiral Ramsey commanded the carrier USS Saratoga in the early days of the war and in 1943 assumed command of a task force which was instrumental in staving off the Japanese counter attacks on Guadalcanal. He was awarded the Navy Cross for extraordinary heroism and distinguished leadership during the occupation of Guadalcanal-Tulagi and the Battle of the Solomons.

★ Rear Admiral Harold Bushnell Sallada, USN, new Chief of the Bureau of Aeronautics, is a fleet officer of long and distinguished service. Three times he has served a tour of duty in the Bureau since 1931 when he was in the Plans Division, but in the war years he has been successively, executive officer of the USS Wasp, commanding officer of USS Albemarle and commander of a Task Force in the Pacific. Rear Admiral Sallada has the Victory Medal, Atlantic Fleet Clasp, the American Defense Service Medal with Bronze A, and the Asiatic-Pacific Area Campaign Medal.

★ Director of Photography in the Bureau of Aeronautics since May, 1944, is Captain Robert S. Quackenbush, Jr., USN. Head of the Photography Section in the Flight Division of the Bureau from 1938 to 1941, Captain Quackenbush inaugurated the first Photographic Interpretation Class in the Navy in 1942. He served in the South Pacific from August 1942 to September 1943. During this time, Captain Quackenbush was awarded the Legion of Merit for outstanding

CAPT. R. S. QUACKENBUSH, JR.

REAR ADMIRAL D. W. RAMSEY

services as Officer-in-Charge of the South Pacific Interpretation Unit and as member of the staff of Commander Aircraft, South Pacific Force. He supervised aerial reconaissance flights and participated in aerial action over enemy territory in face of Japanese opposition, being largely responsible for the excellent photographic accomplishments in that area.

Captain Quackenbush returned to the Bureau of Aeronautics as Assistant Directory of Photography in September, 1943 and assumed his present duties as Director of Photography in May, 1944.

★ Head of the Training Film and Motion Picture Branch is Lt. Commander Orville Goldner, USNR. His wide experience has done much to advance the audio-visual medium in these recent years of Navy service in the production of training films. Commander Goldner has amply demonstrated a talent for organization as well as deep insight into the present and future potentialities of the film medium for imparting training and information, as his record shows.

Picture Credits and Acknowledgements

★ Special acknowledgement is given to the photographers of the United States Navy, the Marine Corps and Coast Guard for a majority of the pictures in this issue. We especially acknowledge CAPTAIN EDWARD STEICHEN'S personal interest and selection of pictures appearing on pages 26 and 58.

★ The pictorial representation of the fleet appearing on page 30 is by special permission granted by LAZLO FODOR of New York City.

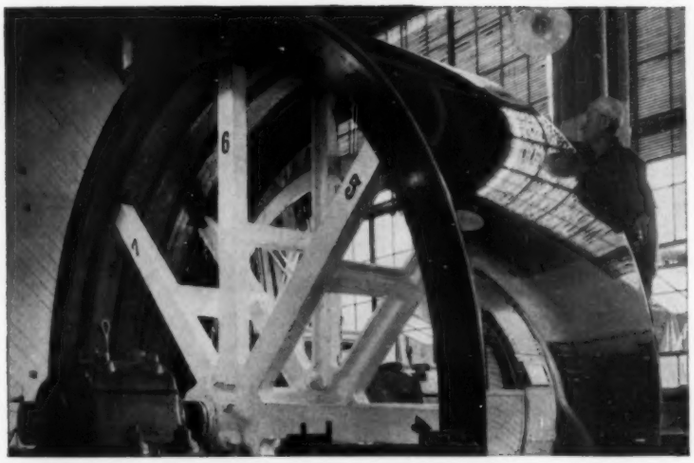
★ ADELE VON SECKENDORFF-GUDENT made the photographic illustrations at the Navy's Hollywood Depot which appear at the bottom of page 48 and on pages 55 and 56.

★ Certain of these articles have appeared in total or in part in the esteemed JOURNAL of the Society of Motion Picture Engineers. Appreciation is expressed on behalf of the authors and this publication.

—*OHC*

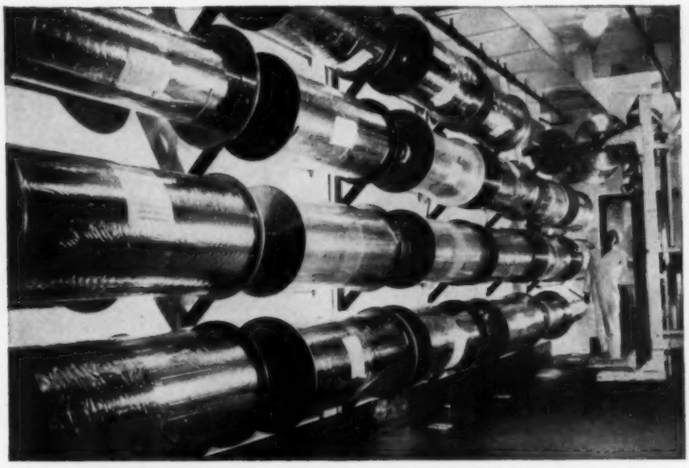
Birth of the film base...

CONTINUING THE STORY OF DU PONT FILM



▶ **"Dope"**—a viscous, syrupy solution made from esters of cellulose—becomes film base by casting upon the highly polished surface of wheels like the one pictured. As the wheel turns, heat drives off part of the solvents in the "dope," and before one revolution is completed, the crystal-clear base can be peeled from the surface.

Under the watchful eye of skilled inspectors, the cast film base is wound on stainless steel mandrels (giant spools). The operators inspect the glistening, transparent sheet in both transmitted and reflected light. Hospital cleanliness marks this operation. Even the operators' lint-proof uniforms are specially laundered in the plant.



In air-conditioned storage vaults like this, the film base is held ready for coating with sensitized emulsion. These rooms are fireproof—clean and dust-free—with temperature and humidity controlled at proper levels. For further protection, every roll is wrapped in Cellophane—which gives the crinkled appearance pictured here.

★ ★ ★

You have just read the second installment of the Story of Du Pont Film. In later issues we will picture further production steps that make it a superior product.

Cinematographers everywhere appreciate the outstanding characteristics of Du Pont Motion Picture Film: fine grain . . . stability of the latent image . . . wide exposure latitude . . . color balance and uniformity of speed and contrast.

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Early in the Pacific War the heroes of "They Were Expendable" proved the PT Boat a surprise weapon of sudden striking power. So effective were these hit-and-run boats, the call went out, "Give us more trained PT men!"

Crews had to be quickly trained to operate and maintain their engines. Time was lacking, yet the training had to be complete and effective.

The result was a complete program, not only for the base training schools, but also for twelve complete mobile units which followed the fighting to forward areas, to continue training the crews as they fought.

Over 540,000 pieces of instruction material were turned over to the Navy. An average of one different sound slidefilm was produced each 4½ days . 70 in all. Student Review Booklets, Instructor's Guides, and Reference Charts were other materials included in this program. Visual Training Corporation is proud to have prepared this program in cooperation with the Packard Motor Car Company —to have served the United States Navy.

LATER
WHAT GOES WITH HOTSHOT CHARLIE? HE'S TOO QUIET!..TERRY, BETTER HAVE A LOOK..THE HALF-PINT MAY HAVE BEEN PACKED INTO THE VACUUM PUMP!
WE FOUND A COPY OF THE "PILOTS' INFORMATION FILE" IN THE COCKPIT AND IS READING LIKE MAD--HE SAYS HE CAN'T DO ANY WORK TILL HE LEARNS HOW THE STORY COMES OUT!
AND SOUR GRAPE

Milton Caniff's cartoon "Terry and the Pirates" is widely known and praised for its technical accuracy and realism. Recently the cartoon featured the "Pilots' Information File" which was another VTC job . . . this time for the Army Air Force.

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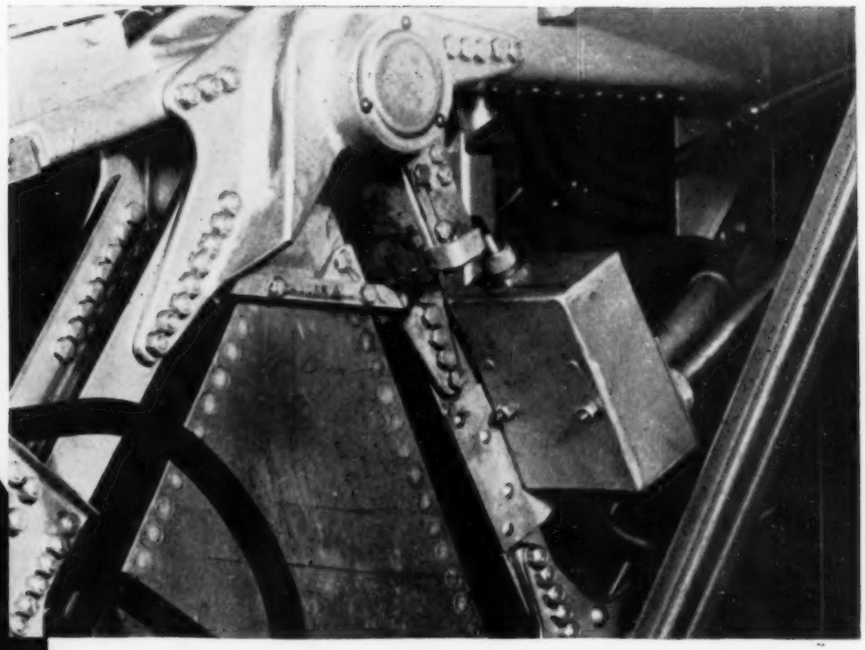
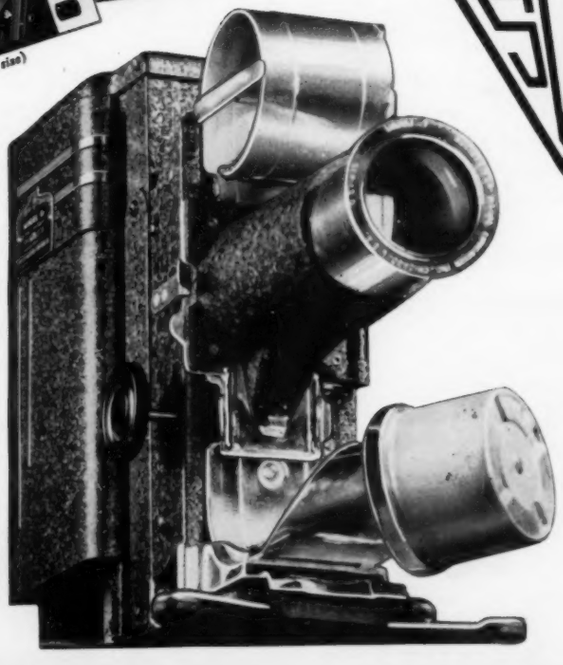


FOR DETAILS USE

(1½ times actual size)

SLIDEFILMS AND SVE PROJECTORS



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Standard equipment in all leading makes of sound slidefilm units.

Slidefilms provide unequalled opportunities for detailed study of mechanical features or group discussions of major steps in the operation of equipment. They are being used extensively by all branches of the Navy for rapid and accurate training in new techniques and new skills.

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Every sailor in the world's greatest battle fleet has been taught a large part of his job by United States Navy Training films. He has learned faster and retained more through this medium for transmitting ideas than in any other way.

Starting from scratch, without benefit of established procedures, the Training Film and Motion Picture Branch tackled a training program of unparalleled size and complexity. The speed and efficiency with which the job has been done is the greatest possible tribute to the officers and men of this unit.

Since Pearl Harbor most of the facilities of Loucks & Norling have been devoted to the production of motion pictures and slide films for the United States Navy. It has been a privilege to work with Navy men.

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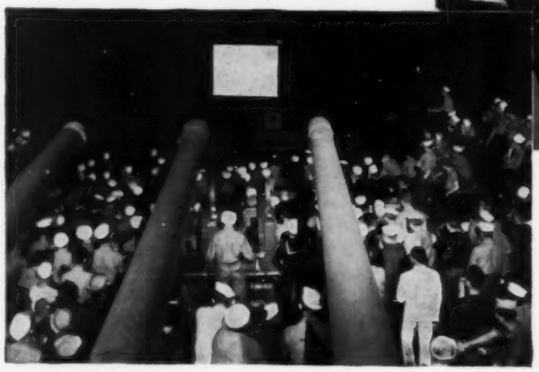
MOTION PICTURES • SLIDE FILMS • SINCE 1923

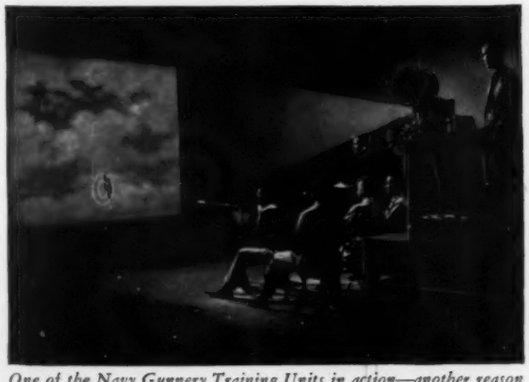
Wherever Navy Pictures are Shown

"Gunairstructor" used to train aviators in marksmanship under simulated battle conditions. (Official U. S. Navy Photograph).



Men of a U. S. Cruiser enjoying movies supplied by U. S. Navy Motion Picture Exchange on after-deck under impressive six inch guns. (Official U. S. Navy Photograph)

Here motion pictures are being shown below deck under difficult projection conditions. (Official U. S. Navy Photograph).



One of the Navy Gunnery Training Units in action—another reason for the splendid marksmanship of U. S. Navy aviators. (Official U. S. Navy Photograph)

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On battleships, carriers, cruisers, destroyers, escort vessels, hospital ships, landing crafts—on tenders, and yes, even submarines—Radiant Screens are helping to bring brilliantly clear pictures to the personnel of the U. S. Navy, the Marines, the Coast Guard and the SeaBees. From "boot training" to the most advanced combat instruction, Radiant Screens are an integral part of the gigantic audio-visual program that has brought our naval forces to its present peak of fighting efficiency. Naval authorities know that GOOD projection requires GOOD screens. We are proud that Radiant Screens have again and again measured up to the high standards of the Navy.

Radiant Screens are also used by U. S. Army, Maritime Service, American Red Cross and Many U. S. Government Agencies

Large numbers of Radiant Tripod, Wall and Ceiling models, as well as the new, practical Radiant "Fold-Pak" Folding, Collapsible Screen are also serving every branch of the armed forces of both the United States and our allies. The use of these Screens in all parts of the world for every type of training, instruction and group entertainment, under all weather conditions, indoors and outdoors, has subjected them to the most rigorous tests ever conceived. That Radiant Screens have passed these tests successfully testifies to the excellence of Radiant workmanship, materials and design.

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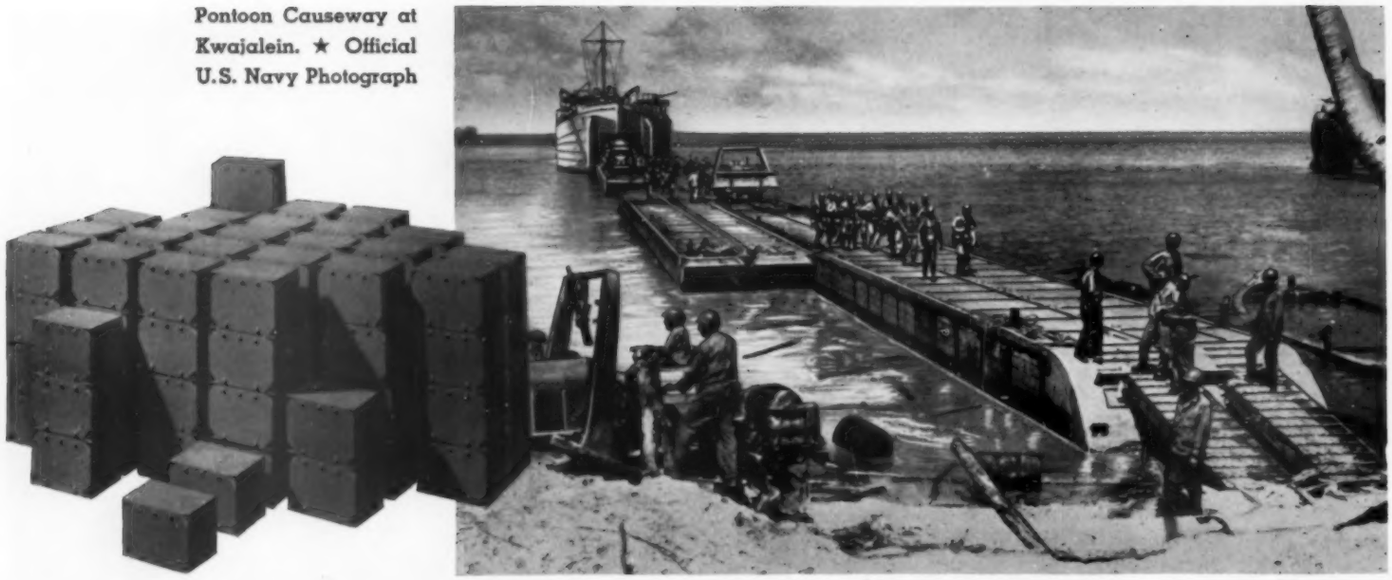

Pontoon Causeway at Kwajalein. ★ Official U.S. Navy Photograph

BUILDING BLOCKS of VICTORY

"THE SLICKEST TRICK OF THE WAR" . . . that's what they called it when the story first began to leak through censorship . . . the story of what Lord Louis Mountbatten called "these miraculous American pontoons."

The story can be told now . . . up to a certain point! About our first meeting in Washington, when they told us of the steel boxes that were to play such an amazing role in the invasions . . . about the secret East Coast proving ground where our camera crews shivered at twenty below and sweated at ninety above . . . about the many thousands of Seabees taught by TRAINING FILMS to assemble the box-like pontoons into barges, wharfs, bridges, drydocks and a dozen other strange shapes.

Then the trial by combat. Pontoon training films flown to a Seabee battalion help in the winning of Guadalcanal . . . pontoons at Kwajalein, the Marshalls, Saipan and Leyte . . . pontoons at Sicily, Salerno and D-Day in Normandy.

More than twenty-five reels of Navy Training Films on Pontoon Gear were produced by our organization in 1942 and 1943. We are proud of our contribution to the training of the Navy's Seabees . . . proud of our association with this gallant band of fighter-engineers who have made history in World War II.

Sm

SOUND MASTERS, Inc.

165 WEST 46th STREET ★ NEW YORK

The Editors of Business Screen present

A REPORT ON THE TRAINING FILM PROGRAM OF THE UNITED STATES NAVY

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UNLESS OTHERWISE NOTED ALL PICTURES IN THIS ISSUE ARE OFFICIAL U. S. NAVY PHOTOGRAPHS

IN THIS ISSUE

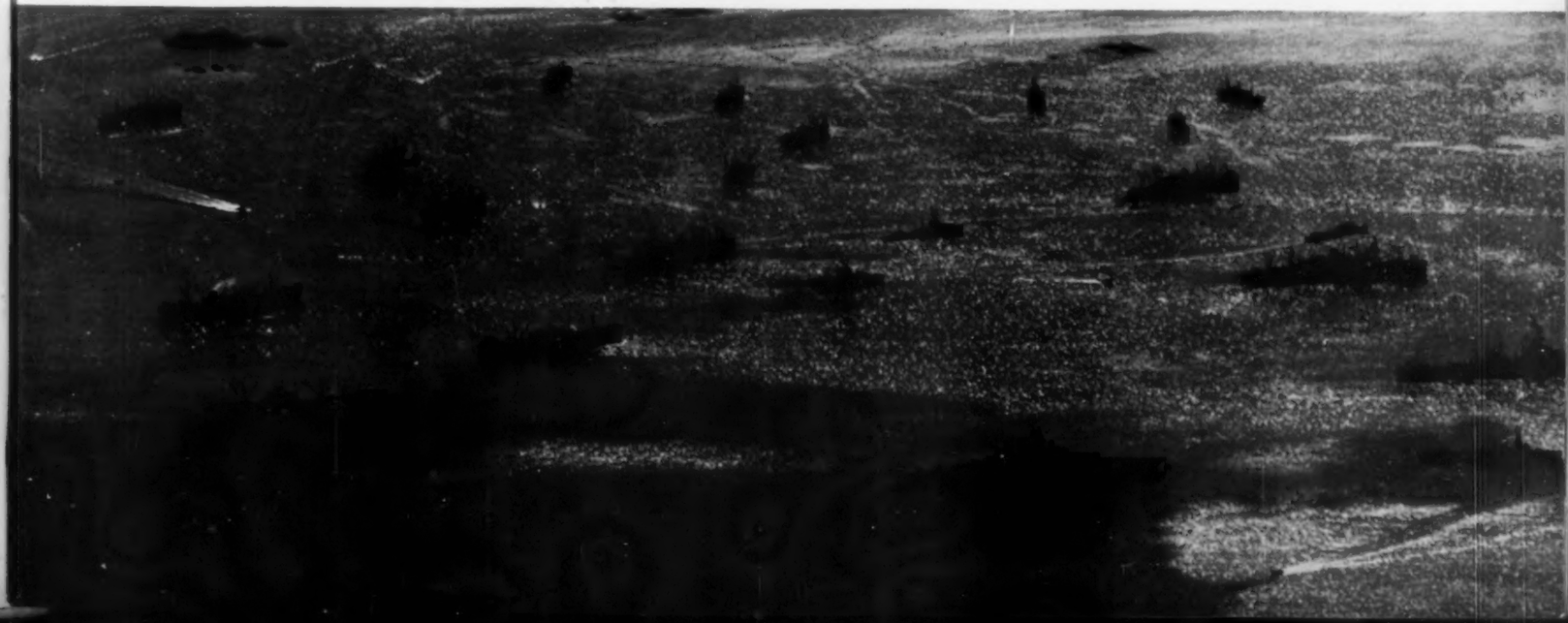
★ More than fifty-five thousand words and possibly twice that number of minutes of earnest thought have gone into the twenty-nine feature articles written for you by the officers and men of Navy training films which appear in this special issue.

It should be observed that *more than words*, it is the spirit of reflection and self-examination of work done and of the tasks ahead which is the *substance* of this issue. This field is always learning and these men are learners, too. Together, we as editors and they as contributors, thus provide you with these lessons learned and learning so that, in education and industry, the whole field of visual communications may be improved to advance our way of life.

Messages of tribute from the producers and manufacturers of these films and of the equipment on which they are shown also appear in these pages. But it is Admiral Ramsey's message on the following page that expresses the final *"Well done!"* which best represents that great American spirit of cooperative enterprise between the men of the Navy and the men of our industry.

There has been but one goal: *got to be damned sure no boy's ghost will ever say, "If your training program had only done its job. . . ."*

—O H C



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NAVY DEPARTMENT
BUREAU OF AERONAUTICS
WASHINGTON 25, D. C.

1 May 1945

•Producers and Processors of Navy Training Films

Gentlemen:

In his Annual Report to the President of the United States, James Forrestal, Secretary of the Navy, said, "Personnel problems during the 1944 fiscal year were analogous to production problems. The Navy was confronted with training in a single year the largest new naval force ever sent to sea in that period of time, a task comparable to obtaining peak production of equipment."

It has been recognized that training films as used in the Navy's effective training program contributed in a very large measure to building the most powerful fighting force afloat. You, as producers and processors of the Navy's training films, have created through hard and loyal work the audio-visual training aids that have helped to build this force.

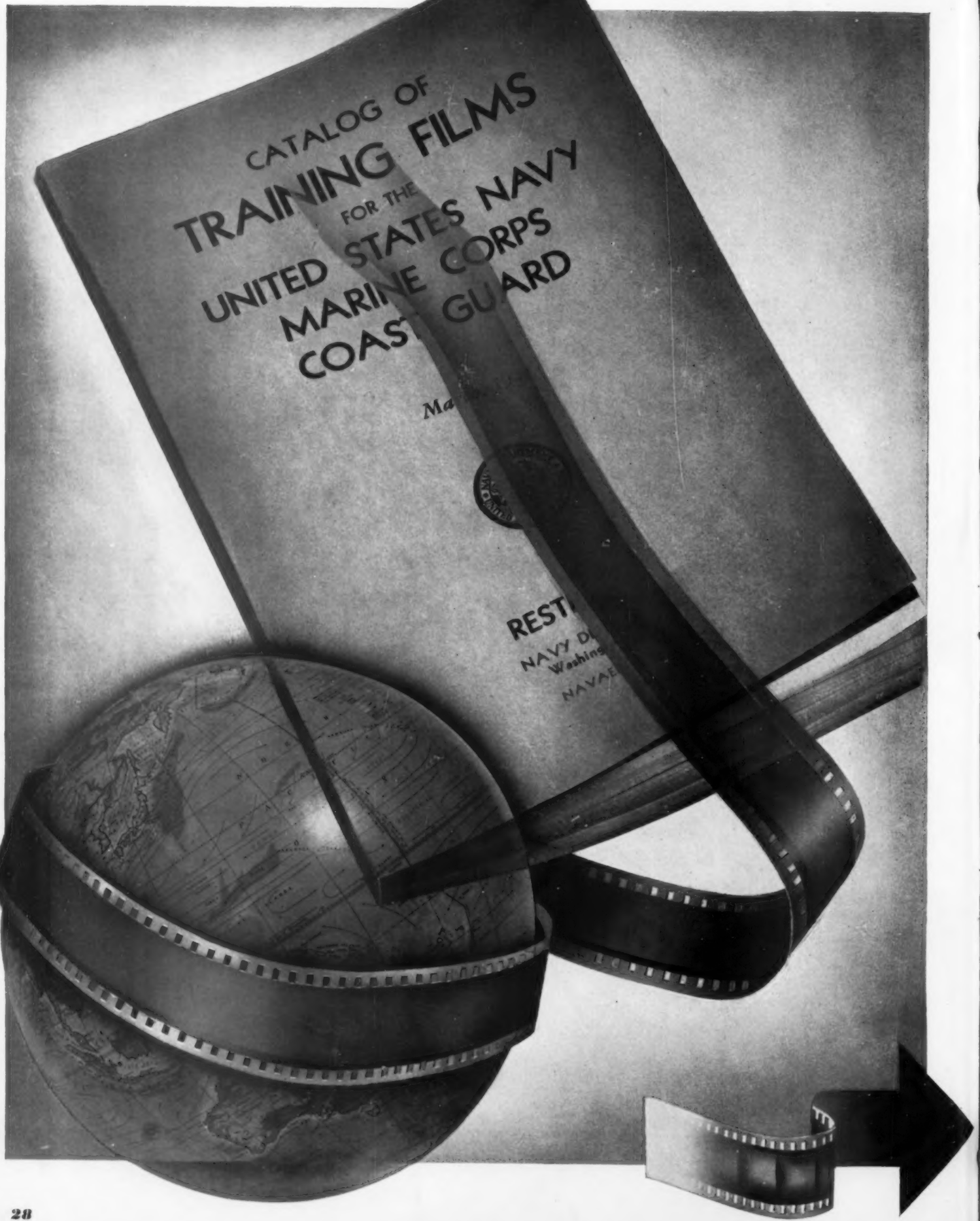
The long hours of work spent in your studios and laboratories, and in the field on the production of these materials are being accounted for in our successes throughout the World. If it were possible, it would be the Navy's privilege to honor each staff member of your many organizations for his contribution to the war effort. Inasmuch as that is not possible, the Navy uses this means to commend you individually and collectively for your good work.

In words of the Navy, "Well Done."

Very truly yours,

D. C. Ramsey

D. C. RAMSEY
Rear Admiral, USN
Chief, Bureau of Aeronautics


CATALOG OF
TRAINING FILMS
FOR THE
UNITED STATES NAVY
MARINE CORPS
COAST GUARD

The Story of Navy Training Films

by Orville Goldner, Lt. Comdr., USNR

CONSIDERED realistically, Navy photography in all of its aspects contributes in large and important ways to war operations that take place every hour of every day and night. Without *military photography* over enemy territory before, during, and after battle action, and detailed interpretation of the results, most campaigns would be much more costly in men, materiel, and time. And without motion pictures and still pictures *specifically for training,* Navy men and women would be less skillful and less prepared for the Navy's complicated war job. It is safe to conclude that the record of Navy photography on both of these major tasks in the war effort speaks for itself.

Most of the Navy's photographic needs are met in the Photographic Division of the Bureau of Aeronautics. The work of the Division includes, among other things, the intricate aspects of military photography, the procurement of photographic equipment and material, and research and development of new techniques and devices. The activities of the Division's Motion Picture Stock and Historical Section are of special importance at this time inasmuch as its responsibility is that of reviewing and cataloging the thousands of feet of combat film arriving daily from the Pacific Theater of Operations. However, in this issue of BUSINESS SCREEN we are concerned with the *training film work* of the Photographic Division.

It must be pointed out that although the Photographic Division is located in the Bureau of Aeronautics its activities are not limited to training film and motion picture requirements of this Bureau. The reasons for establishing these responsibilities in the Photographic Division, of the Bureau of Aeronautics, are simple. As originally conceived, photography in the Navy played its most important role in aerial reconnaissance. As a result, military photography developed with aviation, and the making of training films and all other motion pictures were considered largely photographic problems. Where else should these photographic responsibilities be placed if not in the Division and bureau having the most experience in photography? Perhaps it is oversimplifying to say that the precise location of the training film and motion picture responsibilities within the Navy is of little real importance as long as the job of procurement, production and distribution of films is being done effectively to meet the needs of the total naval establishment. This subject, of course, could be highly controversial and frequently is; but regardless of the decisions reached the facts about the job are significant.

At the outset it must be stated that the motion picture and film strip requirements of the Navy for training purposes are many and various. In some instances they fall into clearly defined categories and in others they do not. As an example, a motion picture to teach men about the use of a gun or aircraft instrument falls naturally into a group of skill films. On the other hand, a film that is to give a man an orientation to an operation under combat conditions and show his relationship to a specific segment of the operation and its part in the total cannot be categorized easily. Inasmuch as it may be necessary to show at length the need and importance of adequate skills in the operation, the mental attitude that is required toward surrounding activity, and other aspects of the job, such a film inevitably will be an orientation, indoctrination, skill and morale film all-in-one. Regardless of the motion picture and slide film requirements of the Navy and the categories into which they fit, the Training Film and Motion Picture Branch of the Photographic Division is prepared to initiate their production. And well over a thousand civilians, enlisted men and officers are in or responsible to the Photographic Division for this work. In the Photographic Science Laboratory Branch of the Division, personnel engaged in the production of high priority, highly classified training films number in the hundreds.

The Coast Guard and Marine Corps have many additional skilled personnel working on training films which also come under the cognizance of the Bureau of Aeronautics. The Bureau's facilities in New York and Hollywood carry on special important training film activities requiring technicians of all types.

In the Training Film and Motion Picture Branch approximately two hundred persons carry on their duties in the Project Supervision, Procurement, Cataloging, and Distribution Sections where the patterns and policies for the Navy's training film work are established no matter where it is done.

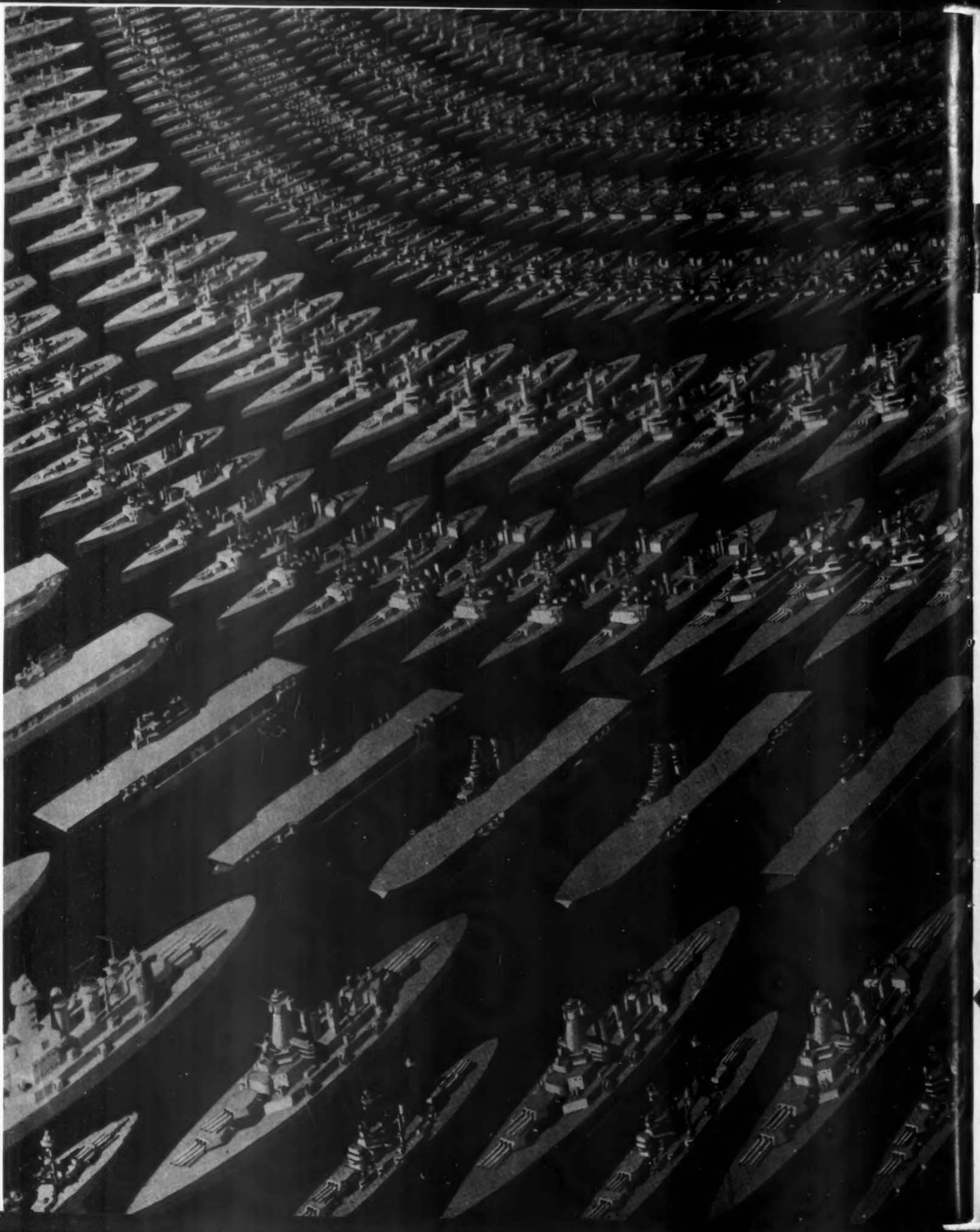
The largest section is that of Project Supervision which is responsible for the initiation and follow-through of all training film production. This Section does the research and planning for production and aligns production with the training job to be accomplished. Obviously, there must be ever-present in the minds of those concerned the sharply defined objectives to be met by every film production. And every detail that is reducible to explanation and clarification on paper in words, in photographs, or drawings, must be so handled to insure that all those involved in production understand and hew to the line. Work of this kind requires close cooperation and coordination between Project Supervision personnel and the technical advisers assigned by the agencies requesting film production. How this is done in its many diverse aspects, and about the never-ending problems, you will learn from articles that follow.

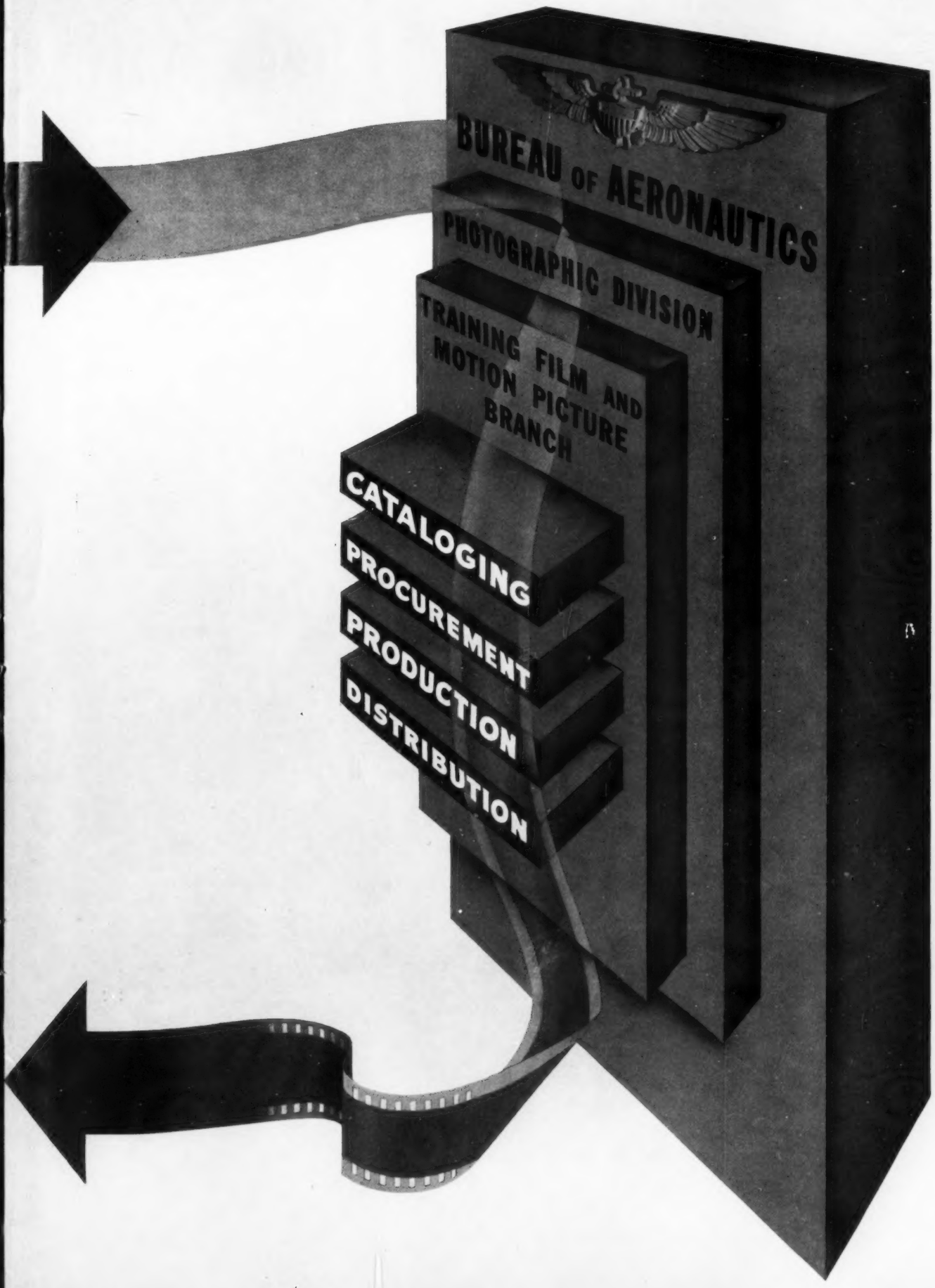
As has been stated, the Project Supervision Section is concerned largely with production. How much is produced and what is implied? Consider for a moment these statistics: in approximately three and a half years a total of 1,100 Navy training motion pictures, averaging two reels each, were produced. In the same period 2,200 slide films were produced. Besides using the facilities of commercial, industrial, and Hollywood producers, the effective top-notch facilities of the Photographic Science Laboratory Branch were used for highly specialized secret and confidential productions.

What about the subject matter? It could not be less intricate than the latest battleship, or plane, or amphibious barge, or the deadliest torpedo, or rocket, or naval gun. Nor could the subject matter be less complicated than the tactics involved in using these weapons of technological warfare.

To get footage for the Navy's motion pictures, Branch personnel have supervised photography in the cramped quarters of submarines, in blimps, in the booming turrets of big guns aboard warships, and in dozens of other locations in and on the sea, on land, and in the air. In fact, personnel at work on research and production for the Navy's films have covered half the earth from forward areas in the European Theater of operations to the far reaches of the Pacific Theater.

Now, research, writing good scripts, actual photography in the places and under the conditions indicated, and all the other work that goes into getting a story-telling photographic image on film, are difficult enough in wartime. But there are a myriad of time-consuming, and often frustrating, related details with which the production of every Navy film must be interlocked, and by which it must be controlled. Imagine for a moment, if you can, the number of agencies concerned and the volume of correspondence necessary to guarantee as far as is humanly possible that every civilian working for every producer of every film is a loyal United States citizen; and further, that every inch of film, sheet of paper, still photo and drawing, which relates to [*Turn to page 32*]




BUREAU OF AERONAUTICS
PHOTOGRAPHIC DIVISION
TRAINING FILM AND MOTION PICTURE BRANCH
CATALOGING
PROCUREMENT
PRODUCTION
DISTRIBUTION

the film, is guarded and kept safe against sabotage or the possibility of falling into enemy hands. This is a security job of great importance.

Consequently, planning and cooperating with the Project Supervision Section on production are the special Branch officers who are responsible for handling all the implied security details and the minutiae of arrangement making.

Along this line, imagine how many official letters have to be written with rigid limitations to clear the way for a civilian camera crew to go aboard a Navy Yard, an Air Station, an Ordnance Factory, or a submarine, patrol plane, or transport. It is redundant to say that the Navy's producers, scattered over the country, get most impatient because they cannot get immediate clearance by return wire or over the telephone for Joe Doaks, the newly hired cameraman, to join a photographic crew on a weapon testing demonstration or other secure activity. Occasionally, even yet, producers expect the availability of aircraft, ships, guns, and everything else, for this or that shot, believing, apparently, that the war can be called off for given periods while we make films. Nothing could be further from the truth, for, in fact, the film program must be superimposed on and geared to every activity preparing for combat without disturbing its rhythm more than the minimum. Material, equipment, and personnel must be used, when available, in the larger training or operational pattern established for them, and not at our discretion for film production.

To this point, we have been concerned for the most part with production functions. But of no lesser importance are the functions carried on by the Procurement, Distribution, and Cataloging Sections of the Branch.

As of this date, the Training Film and Motion Picture Branch has approximately 700 titles in one stage or another of production. To arrange for the procurement of this number of training film titles, to initiate the contracts originally, and to make the endless adjustments created by unforeseeable conditions is a big job. To prepare estimates of film needs and budgets for periods a year or more ahead is also a big job. This is the type of work done by the Procurement Section of the Branch. These are the routine functions. At the same time, production and distribution costs must be studied and analyzed continuously to guarantee, on the one hand, the maximum flexibility of operation within budgets and, on the other hand, that the Navy gets its money's worth.

The work of the Distribution Section is that of distributing the Navy's training films to training establishments in the United States, to ships at sea, and to Navy activities in the near and far corners of the world.

It is necessary here to point out that the Navy, like the other Armed Services, does not distribute its own films only. At all times, the Training Film and Motion Picture Branch, through its Cataloging Section, is searching every known source for training films *produced* or *in production* which may be useful in the Navy's training program. Over 10,000 training film titles from all sources are listed.

However, the largest job of the Cataloging Section is that of keeping the production records of the Branch up to date, and to issue at regular intervals a comprehensive catalog containing all film titles known to be of value for Navy training. The current catalog of 500 pages contains 3,900 titles cross-indexed in several ways to achieve maximum usefulness. Titles are classified under 80 headings starting with those on the subject of *Abandoning Ship* and ending with those on *Zero Jap Fighters; Recognition Of*. In the Cataloging Section, a group of specialists views and evaluates every training film produced by the Navy and all others considered useful which have been produced by other Armed Services, other countries, and civilian and industrial organizations. New requests for training films by Naval activities are checked carefully against all available lists to insure that there will be no duplication, no waste of time, effort, or critical material. Of genuine significance is the fact that the U. S. Armed Services have established a close liaison on film problems and procedures to prevent duplication and to raise standards of production, improve distribution, and achieve more effective utilization.

In this article an attempt has been made to give an overview of the work of the Training Film and Motion Picture Branch and its relation to the many-faceted United States Naval Establishment and its activities throughout the world. Moreover, in addition to the intra-Navy aspect, there have been indicated two other aspects which cannot be overlooked. One is the Branch work which is inter-U. S. Armed Service; that part of the job which relates to, and is carried on in cooperation with, the film work of the other U. S. Armed Services. The other and of great importance, is the Branch job which relates to the training film work and needs of the Armed Services of the United Nations. In explanation of what is being done, here are a few details.

To implement the exchange of training film information and training films between the Armed Services of the United Nations, there was established in July, 1942, the United Nations Central Training Film Committee. The functions of the Committee, quoted in part from the *Constitution & Terms of Reference*, are as follows:

"To provide opportunity for the discussion of problems, points, or questions relating to the production, procurement, and distribution of training films; providing such problems, points, or questions relate to the interchange of training films among the member nations represented on the Committee;

"To provide for the facilitation of procurement and distribution of training films among the Branches represented, when such films are the concern of more than one member Branch;

"To collect and collate such experience in the use of training films as would prove of assistance in advising members of the ways in which the best results have been achieved."

The Committee holds regular meetings at The National Archives in Washington. Up to this time over 7,148,000 feet of motion pictures for training were received and filed; 3,761 slide films were handled in the same period. A large number of the motion [*Turn to page 84*]

Check With Cataloging

WHAT IS YOUR IDEA of a "Film Cataloging Section"—a musty office force buried in some stagnant corner with work materials piled high on every desk, and myopic, migraine menaces poring over reports that are neither interesting nor important to the Navy's film production program? If that is the case, you are wrong—so very wrong—on every point but one. True, desks are continually piled high with work demanding immediate attention, but as for the importance of the work—it is the confidential opinion of everyone concerned that the Cataloging Section must stick right in there and keep pitching or a stronger word than "Snafu" would have to be dreamed up to describe the potential chaos in the film program.

Basically, the functions of the Cataloging Section of the Navy's Training Film and Motion Picture Branch are two-fold:

1. To accumulate and to maintain records on:
   a. Films produced by the Navy,
   b. Films from other sources having potential use in the Naval Establishment, and
2. To disseminate film information throughout the Naval Establishment:
   a. During production of each film, and
   b. After its completion.

As shown in the accompanying chart, Cataloging is "in" on the very early stages of every film made by the Navy. In fact, the Cataloging Section as such is the first section in the Training Film and Motion Picture Branch required to take action upon receipt of a request for film production. During those first hours associated with the birth of a new project, many things take place but perhaps the most significant of these is the assignment of a "Navy Number." By means of this number, the project is recognized as official—its identity is established for all future reference and it becomes firmly entrenched in the record keeping system of the Cataloging Section for time immemorial. Without such a number, reports of the existence of plans to make a film on any given subject are just so much scuttlebutt.

It is the work of but a few hours to perform all functions required of Cataloging at this stage so the new project soon finds itself in the Project Supervision Section where the creative work actually starts. While the film is taking shape under the guidance of the Project Supervision Section, the Procurement Section may enter the picture several times in order to take care of arrangements with commercial producers, laboratories, and so on. Ultimately, the Distribution Section receives the approved neg-

ative and starts to distribute prints to all activities in the Naval Establishment slated to receive them.

Throughout these various transfers of initiative, the Cataloging Section maintains the closest possible liaison with each project. As shown by the diagram, all materials accumulated during the production of a given film are sent to the Cataloging Section for review and file. Such things as production outlines, action outlines, story boards, scripts, correspondence, and reports of all kinds represent the source material from which Cataloging derives its fund of information. It is while these production materials are accumulating that the Cataloging Section begins to fulfill its second major function—that of disseminating information. Every shred of material routed to the Cataloging Section for file from the more than 700 films currently in production is scanned carefully for hints on progress and development. When documentary evidence points to the fact that a film has reached any of several production mileposts, that fact is announced in the weekly Film Log. These announcements have been found to be important for several reasons. For one thing, it has been found wise to spend some time and effort keeping officer-supervisors informed of new film topics and progress outside of their own fields of specialization. One never knows when a supervisor may have to branch out into other fields so the broadest possible informational background is essential. Furthermore, it has been found possible frequently to correlate production activities where two seemingly unrelated film subjects are found to have something in common.

Once a film has been approved and initial distribution gets under way, the broader program of dissemination of film information is undertaken through the medium of the film catalog. A complete publication of over 500 pages, this catalog presents a wide variety of information about those films which are available to the Naval Establishment. Each film listed, for instance, is described in terms of the following:

1. Navy serial number.
2. Title.
3. Security classification.
4. Running time.
5. Date of release.
6. Whether the prints are in color or black and white.
7. Whether the film is silent or sound.
8. Description of film content.

Further, the organization of the catalog gives an indication of where each film is best adapted to serve the Navy and provides several ways in which title search may be conducted. Anyone using the catalog, for instance, may use either the alphabetical, numerical, Army-numerical or subject index depending upon what information is available for starting the search. This complete catalog is issued every four months and is kept up-to-date by means of cumulative monthly supplements.

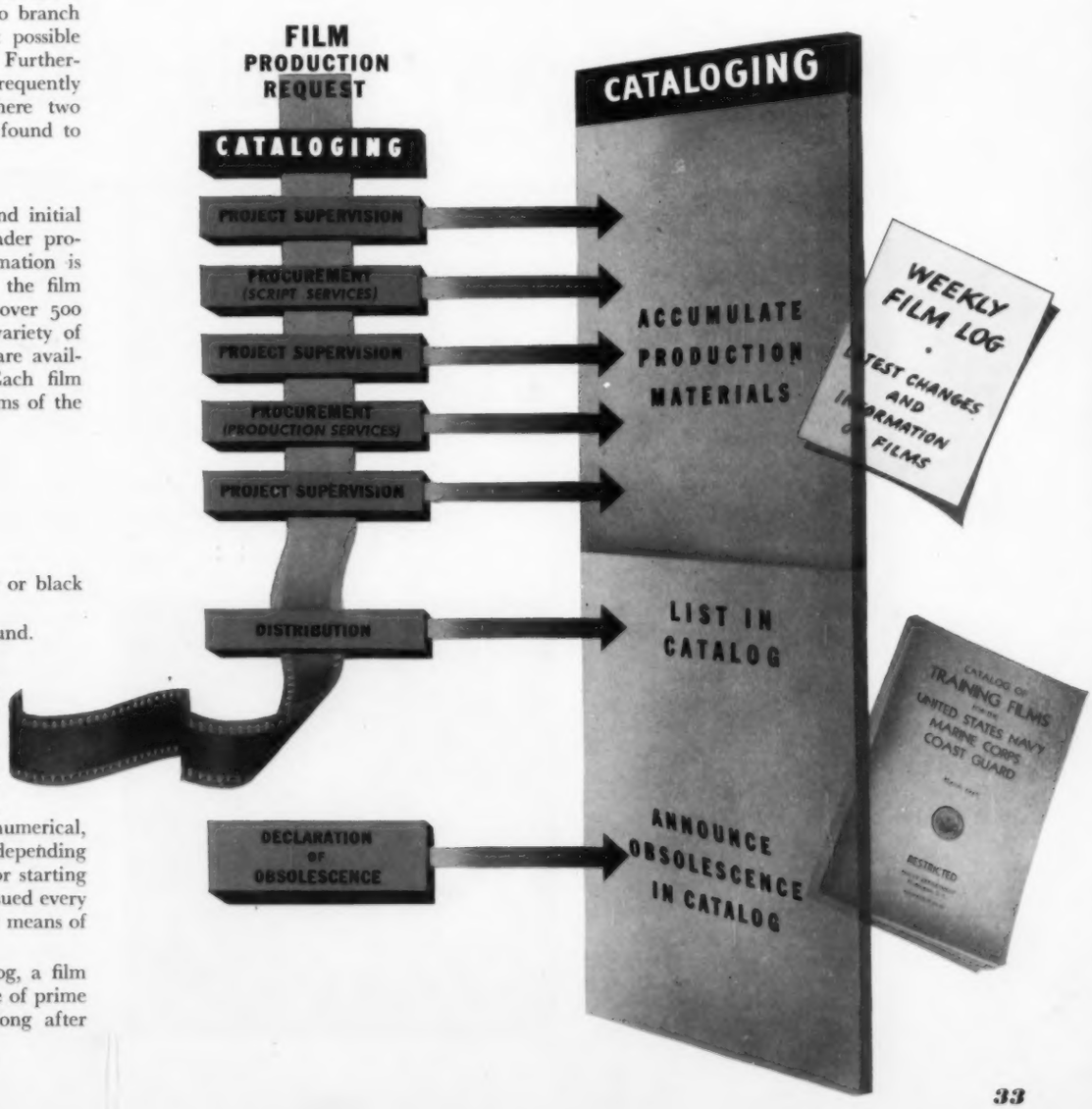
Through the medium of the catalog, a film retains its identity and continues to be of prime interest to the Cataloging Section long after

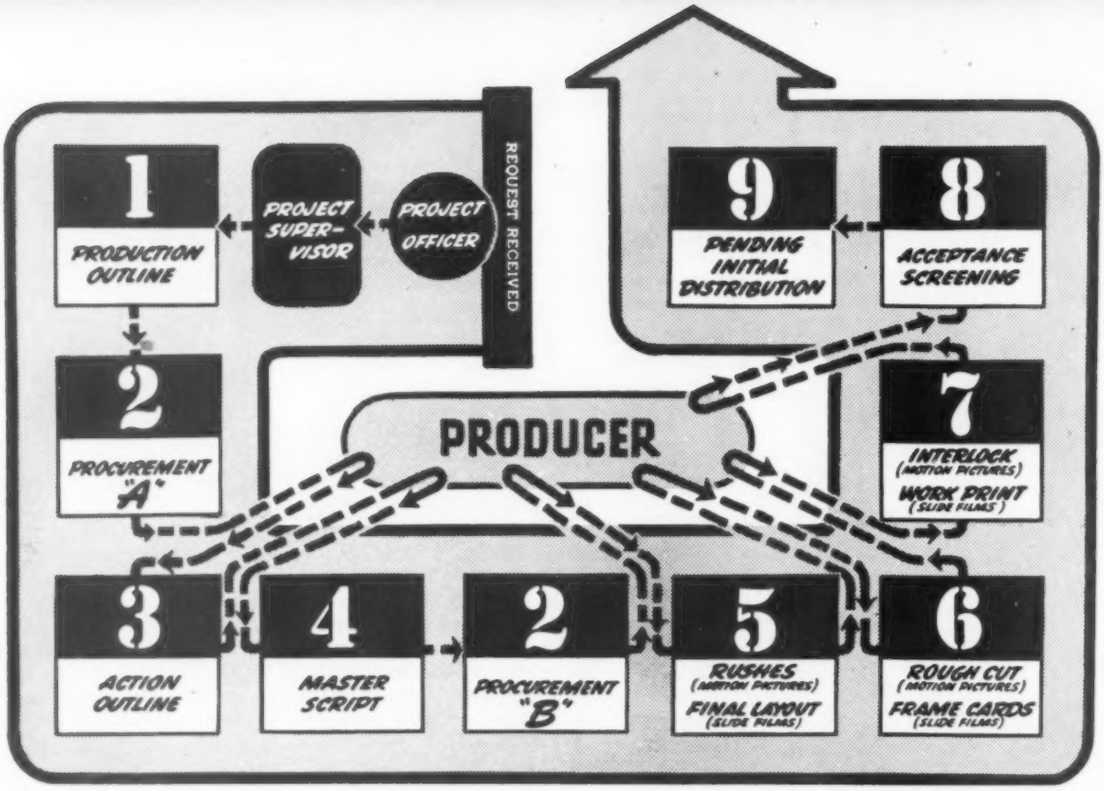
by Jack H. McClelland, Lt., USNR

those concerned with its production have forgotten about it. Once listed in the catalog, in fact, it is never withdrawn. Only upon being declared obsolete is it moved and that move is just to another section of the catalog.

Finally, a word might be said about one of the many correlative activities of the Cataloging Section, the existence of which was inferred above by mention of the catalog's "Army-numerical" index. In a word, the Navy shows keen interest in films from other sources—sources such as the Army, the various private and commercial producers of films, and all of the Allied Nations. By exploring such sources, many films have been reviewed by the Cataloging Section, adopted, and put in use much more quickly than could a film have been produced to fill the same need—and at far less cost.

That is the story in a nut-shell. While it has been possible to present but a brief resume of the Cataloging Section's many responsibilities, it is hoped that in so doing, any wrong impressions about the nature and importance of the work have been corrected. True, it is primarily a record-keeping job with a distinct paucity of excitement, but that fact is lost in the feeling of satisfaction derived from being a cog in the Navy's film program—the importance of which is daily attested to by the frequently heard phrase—"CHECK WITH CATALOGING."





Procedures for Navy Training Film Production

by Richard B. Lewis, Lt. Comdr., USNR

"Navy training film production is bounded on the North by Navy Regulations, on the South by the Severn River, on the East by Washington weather, and on the West by Production Procedures."

THUS wrote a new Naval Reserve officer who had just completed a quick overview of the charts, booklets, and lists of *do's* and *don'ts* that comprised his introduction to the Navy training film production program.

Basic to that program is a core of procedures established to meet the intricate requirements imposed by the Navy, including efficient and economical procurement; detailed records of progress and accomplishment; regular and systematic controls of production and distribution; official checks for technical accuracy and film craftsmanship; and confirmation of the training value of each film.

To avoid duplication of effort and to fix responsibility in meeting these rigid requirements, the Training Film and Motion Picture Branch of the Navy Bureau of Aeronautics has four sections directly concerned with training films. These sections are assigned the responsibility of cataloging, procurement, supervision, and distribution of training films. Each section works in close cooperation with the other three, and all share in the over-all responsibility for training film production.

Many people are responsible for the successful production of each Navy film, but there are two people assigned to each new project who are responsible for seeing it brought to completion: The Project Supervisor and the Technical Adviser. The Project Supervisor, assigned by the Training Film and Motion Picture Branch, knows film production procedure and techniques; he knows the problems of film production in the Navy, and procedures for meeting them; and he knows, above all, how to coordinate the efforts of many persons and activities to one predetermined end—an effective training film. The Technical Adviser, assigned by the bureau or activity requesting the film, is a specialist in the subject to be treated and is responsible for the technical accuracy of the film. Together, the Project Supervisor and the Technical Adviser plan and supervise the project from start to finish. To facilitate their work, the personnel of the four sections of the Training Film and Motion Picture Branch provide assistance on production problems. From the Project Supervision Section, special assistance is available to the Project Supervisor from Project Officers, Training and Research Specialists, artists, and writers who may be called upon to contribute their ideas and experience as the project develops. Also, there are special desks in the Branch which assist in matters of security, travel, visit authorizations, and arrangements for special equipment and personnel needed in the production.

The producer, whether Navy or commercial, provides experts in script writing, photography, animation, direction, and all the other details of film production.

Every person participating in a Navy training film production has specific responsibilities, and full approval of the work done in each stage of production must be obtained before the next is started. Through this routine, false starts

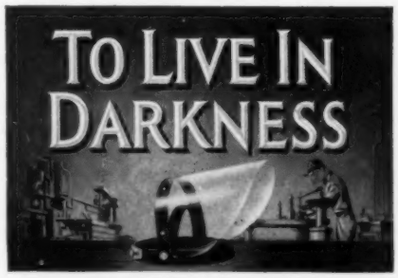
are minimized, and time and efforts are conserved.

The chart on these pages shows the standard production procedure. The numbered stages are followed in sequence in the production of both motion pictures and film strips. Thus, the scheduling, supervision, reporting, and approving of each training film is a matter of around-the-chart routine. Whether the film is produced by a commercial studio under Navy contract, or by Navy production units such as the Photographic Science Laboratory, Anacostia, D. C., or the Navy Photographic Services Depot, Hollywood, California, the standard procedure is followed.

Preliminary to all other work on a Navy training film project is the Production Outline, a detailed document prepared by the Project Supervisor and the Technical Adviser, which provides specifications for the proposed film upon which accurate cost proposals for the script preparation may be made; it defines the purpose, scope, proposed content, and film techniques recommended. When completed and approved by both the Bureau of Aeronautics and the authority requesting the film, the Production Outline is a clearly stated plan for a training film, for a specific audience, to do a specific training job. Then, and only then, is procurement of script writing services undertaken and writing begun.

As the training film project advances, the work is submitted for approval at each stage (See chart), progress is recorded, and the next stage begun. Only through strict adherence to this routine has it been possible to insure quality of product and reasonable promptness in delivery of the hundreds of training films regularly in production. Without it there could be no order and no control.

Occasionally some individual has argued that the problem of preparing his film is "different," that the procedures are an obstacle to rapid production and interfere with creative work. These objections have long since been disproved. The Navy has produced many types of training films, those for instructing Navy men in technical skills, those which teach tactical or operational problems, and those which "indoctrinate" or "orient" the student in the Navy way of fighting a war. Whether the training problem to be solved is the operation and maintenance of a torpedo tube, the induction of a pilot into the complexities of aerial tactics, or the preparation of a new Navy man for life aboard his first ship, the making of the appropriate training film passes through the same stages of preparation: planning, writing, photography, editing, and acceptance. Only through the coordination of effort established by standardized procedures has the Navy training film program been possible.



"Best Occupational Safety Film" Award of National Safety Council Given Navy Training Film

THE National Safety Council has given the Navy training film, *To Live in Darkness,* the award for the best non-theatrical or educational motion picture produced in 1944 in the field of occupational safety.

This motion picture was one in a series of seven films on the subject of safety produced by the Training Film and Motion Picture Branch of the Photographic Division of the Bureau of Aeronautics for the Division of Shore Establishments and Civilian Personnel of the Executive Office of the Secretary of the Navy. Other films in the series are *Safety in Navy Yards, Safety in Air Stations, Safety in Offices, Safety for Welders, Respiratory Protection* and *Safety in Ordnance Plants.*

The films were prepared primarily for use in civilian training programs at Navy shore establishments. They also are being used by manufacturers holding Navy contracts, and will be made available to other firms for purchase of prints through the U. S. Office of Education.

Other National Safety Council film awards are made annually in the field of traffic safety, etc. The award to *To Live in Darkness* marks the first time that any film produced for the armed services has been so honored. Honors for this award are shared by the writer, the producer and by the officers and men of the Navy who participated in the program.

FILM PROCUREMENT

by Lawrence R. Goldfarb, Lt. (jg), USNR

THROUGHOUT this issue of BUSINESS SCREEN you see various articles regarding the origin, production, distribution, and other aspects of Navy training films and motion pictures. The articles explain the methods by which the process of training naval personnel by means of audio-visual aids has been built into a well integrated machine, and also the procedures by which it is kept operating smoothly and efficiently. One fact must be remembered, however—the fuel that keeps the machine running is money—the money that buys the commercial talent for the writing of scripts; the money that pays the commercial producers for the producing of films; the money that pays the film processing laboratories for the millions of feet of release prints which are distributed to naval activities all over the world; and the money that buys the countless other items required by the Navy's training film and motion picture program.

The responsibility for the expenditure of these funds rests with the Procurement Section of the Navy's Training Film and Motion Picture Branch.

The functions of the Procurement Section may be segregated into the following *broad* categories:

(1) To negotiate and initiate contracts with commercial producers for the production of Navy training films and other motion pictures;

(2) To negotiate and initiate contracts with commercial film laboratories for the processing and printing of training films and other motion pictures; and

(3) To purchase other miscellaneous materials necessary to implement the Navy's training film and motion picture program.

Needless to say, the effective execution of these functions necessitates the performance of countless routine operations and the maintenance of a myriad of records. At the present time the services of 15 persons, including officers, enlisted personnel, and civilians, are devoted to the performance of these duties in Washington and on the West Coast.

Anyone watching the Procurement Section in operation, and being unaware that it is part of the Navy, would think it was nothing more than an efficiently operated purchasing office of a large commercial organization. Fundamentally, he would be correct, because the supplying of training films and motion pictures for the entire Navy is "big business" and requires big business methods. The only differences are these: Instead of spending the money of a comparatively limited group of stockholders, we are spending the money of the nation's taxpayers; and instead of being governed by the policies of a board of directors responsible to a group of stockholders, we are controlled by the policies and regulations of the United States Navy, responsible to the nation as a whole.

IT TAKES A LOT TO MAKE A PICTURE

To some it may seem that the amounts of money involved do not justify the meticulous attention accorded them. While it is true that the savings on training films through careful procurement policies are a small amount compared to the expenditures for the entire war effort, it must be remembered that the same policy of diligence followed by other naval activities in spending billions of dollars for countless other war needs results in an overall saving which is far from small.

From its inception, one of the biggest problems confronting the Procurement Section has been the development of the right type of contract for training films—one that was sufficiently flexible to protect producers against the contingencies of film production, yet rigid enough to ensure that full value was being received for the Navy's money. The biggest obstacle to attaining that objective was the fact that, like death and taxes, changes of one sort or another during the course of producing a training film are a certainty. The following examples are typical: In one case, because of bad weather, the producer's camera crew was able to do only 51 days shooting out of a total of 100 days spent on location. In another instance, after an entire production crew had travelled 800 miles to photograph required scenes on a certain type of ship, it was found that the ship had to leave immediately because of unexpected operational requirements. Again, after a training film was virtually completed, revolutionary developments in the techniques which were the subject of the film, rendered worthless a large portion of the film that had already been completed. Since the writing of "cost plus profit" contracts are contrary to the policies of the Bureau of Aeronautics (which has cognizance of all of the Navy's training films), it does not require much imagination to envision the difficulties of formulating a practical method of contracting for training films.

After a period of more than two years, during which various contractual methods were in effect, the current practices were evolved and have proved practical and satisfactory. The contractual policies and procedures currently in effect can best be explained by describing a typical contract negotiation for a training film production.

Before proceeding, however, it should be explained that under current procedure, negotiations for the *production* of a film are not undertaken until the master script for that film has been completed. The script may have been written by the Navy, or by an independent writer. Let us assume, then, at this point a master script has been written and approved, and that it has been decided to have the film produced commercially and not by naval personnel.

The first step will be to solicit a price proposal for production of the film from one or more of the many available producers about whom the Section has much detailed information in its files. It would be impracticable, obviously, to solicit *every* available producer each time a production is contemplated. How, then, does the Navy choose its producers for specific projects?

Among the factors that govern the selection of producers to be solicited in any given instance are the producer's proximity to the shooting locale, his experience and skill in the particular production techniques desired, his record as a "high-cost" or "low-cost" producer, and his ability to deliver the film within the required time.

When it has been decided which producers are to be solicited, a copy of the master script is submitted to each with a request for the submission of a price proposal for production of the film. Before the producer submits his pro-

posal, however, a conference is held between the producer and the Navy Project Supervisor assigned to the project. The purpose of the conference is to clarify all of the production details so that the producer may have accurate data on which to base his proposal.

A cost breakdown is required to be submitted with each proposal, showing in detail the individual items of cost which comprise the total price. There are several advantages to the cost breakdown. First, it induces the producer to estimate the cost of the film in a logical and orderly manner. Second, it enables the Navy to determine the reasonableness of the price by evaluating each of the individual items comprising the total cost.

The specifications are eventually incorporated in the contract, and are a source of protection to the producer in cases in which production changes result in increased costs.

Prior to the policy of incorporating production specifications in training film contracts, it was frequently difficult to amend contracts upward. This was so because the contracts called for the production of a film on a certain subject, but lacked *specific details* of what the price purported to cover. It was, therefore, difficult to establish contractually that any increase in costs was due to a change in the content of the film and not to a mis-estimate on the part of the contractor. To remedy this situation, complete specifications similar to those previously referred to are now included in all training film contracts. Thus, when a producer's costs are increased because of changes, that fact can be established more easily and facilitates amending the contract.

When the proposal is received, it is then that the Procurement Section really starts to function on all cylinders, so to speak. The cost breakdown is reviewed carefully to determine that the estimates of time for photography, editing, and similar items are not excessive, and to determine that the charges for various services and materials are likewise not excessive (the estimates of time, and other production details, are also reviewed by the cognizant production personnel). The estimates of film requirements receive special attention, not so much because of the money involved (which usually represents a minor part of the total cost), but because film is a critical war material and the use of any more than is absolutely necessary is discouraged. After carefully considering the proposals from various standpoints, a decision is made as to which producer will be awarded the project.

Let us assume, then, that at this point the cost details and specifications have been reviewed and the producer for the film has been selected. The next step is to request the Contracting Officer of the Bureau of Aeronautics to award a contract to the producer selected. Before the contract is awarded, however, the request—a special form setting forth the essential details of what is to be included in the contract—must pass through certain other sections in the Bureau, each one forging a link in the chain of routine operations which leads from the contractor's letter of proposal to the awarding of the formal contract.

After the contract has been awarded and the producer has commenced production, the Navy frequently requests production changes involving increases in cost. For example, the location at which photography is to take place may be changed; direct recording may be substituted for off-stage narration; or the film may be lengthened; in fact, the changes that may take place are innumerable and their occurrence can almost always be counted on.

For purposes of expediency, the Navy Project Supervisor assigned to the project is given authority to authorize individual changes which involve a relatively small amount of money. More costly changes require approval by the Bureau. After completion of the film the producer may consolidate the costs of all of these authorized changes into one request for an amendment to the contract.

Training film contracts, as currently drafted, also provide for increasing the price of a contract for additional costs resulting from causes beyond the control of the contractor. Chief of these causes is "stand-by" time due to adverse weather conditions and unavailability of naval personnel or equipment.

In many instances the final costs of production are less than the contract price due either to production changes requested by the Navy or to unexpected economies in production. In those cases, the contract price is redetermined and reduced accordingly. In some contracts, such price redeterminations are specifically provided for by an appropriate clause. However, even though the clause may not be included in a contract, there is, nevertheless, a tacit understanding between producers and the Navy that the price is subject to reduction.

Thus, it can be seen that the type of contract now in use has the quality of flexibility desirable and necessary in training film contracts, yet adequately protects the Navy's interests. In effect, the Navy says to the producer, "We agree to pay you so many dollars for producing a film in accordance with the approved master script upon which your proposal was based. If we authorize you to make any changes which involve additional costs, the contract price will be increased accordingly, or if circumstances beyond your control necessitate additional expenditures, the contract price will likewise be increased. If, however, your actual cost exceeds the contract price because you estimated carelessly or were inefficient, you will be paid the contract price only."

Evidence of the effectiveness of the Procurement Section's policies and procedures may be found in the results of audits of training film producers' records. These audits are conducted by the Navy Supervisory Cost Inspectors of the various Naval Districts. Such audits have revealed that the majority of the firms producing films for the Navy are earning what the Navy considers a reasonable profit. In the few cases in which the profits earned exceeded what is considered a reasonable rate, the causes were found to be due primarily to differences between the Navy's and the contractor's methods of computing costs.

In mentioning cost audits and records, it is of interest to note that the Navy has in its files many letters from producers expressing appreciation for the part the Procurement Section has played in impressing upon them the necessity for, and desirability of, appropriate cost records. Many producers who had previously failed to recognize the value of adequate cost records are now "sold" on their indispensability. Officers of the Procurement [*Turn to page 84*]

Distribution's Double Duty

by Ernest Martin, Lt., USNR

SOME 40,000 prints of training films monthly are borne by courier, by train, by ship, and by plane to Navy personnel everywhere. Prints of new productions and reprints of other productions move in a continuous stream to training centers ashore and afloat. An advance base is established, a new air strip is prepared—films arrive promptly on the scene. This is one responsibility of film distribution—getting the film there. The other starts back in Washington, long before finished prints are in the shipping cases. This second responsibility involves the phases of preparing distribution lists, ordering prints, and maintaining printing schedules.

The distribution function starts before a Navy picture is produced. In fact, it begins with the consideration of questions during the early planning stages of production. For whom is this film intended? What is the size of the audience? The answers provide new questions in turn, questions Distribution must answer, such as, how many prints will be made and where they will be sent.

Hundreds of Navy films are in various stages of production. In some months close to one hundred motion pictures and film strips are completed, approved officially, and turned over to Distribution. Hence, coordination of requirements are important if distribution is to be done effectively and with dispatch. Perhaps a glimpse of the film distribution organization in the Navy may best show the pattern.

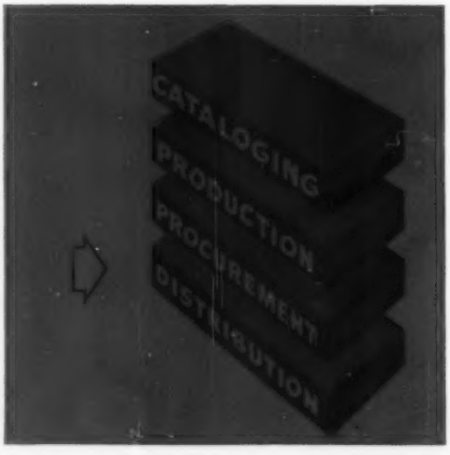
The Bureau of Aeronautics is charged with the responsibility of supplying prints of training films. Centered in this bureau are the functions of obtaining and coordinating distribution lists, ordering prints and sending them to their destination. However, the Requesting Authority, that is, the bureau, activity, or command, which initiates a request for the production of a film, simultaneously prepares and forwards a request for the distribution of required prints. Some of these initial distribution needs are served directly. For aviation films, distribution lists are prepared and submitted by the Distribution Unit in the office of the Chief of Naval Operations. All remaining film requests for distribution, in volume the largest group, are prepared or screened by the Bureau of Naval Personnel before being presented to the Bureau of Aeronautics.

The organization within this bureau which receives the lists is the Distribution Section in the Training Film and Motion Picture Branch. After lists are coordinated, print orders are determined and placed according to priorities assigned and schedules in the film laboratories. Shipping is then made from one of the centers established in Washington, New York, and Hollywood.

The destinations to which training films are sent also follow a pattern. Distribution is accomplished, in part by providing prints directly to selected schools, training centers or ships, and, in part, by providing prints to film libraries. Experienced officers in the film libraries then are given the responsibility of distribution in their area or district.

Training Film Libraries have been established in each Naval District, at important Naval Air Stations and at strategic locations overseas. The Bureau of Naval Personnel, the Chief of Naval Operations, the Commandant, Marine Corps and the Commandant, Coast Guard have cognizance over the existing training film libraries, each providing films and services as needed. It is of interest to observe that already a film library is operating in Guam, and it is not unlikely that new libraries will be established farther to the West. These libraries serve in the dual capacity of depositories for needed films and purveyors of film services. The advantages derived from their ready accessibility to the personnel served are self-evident.

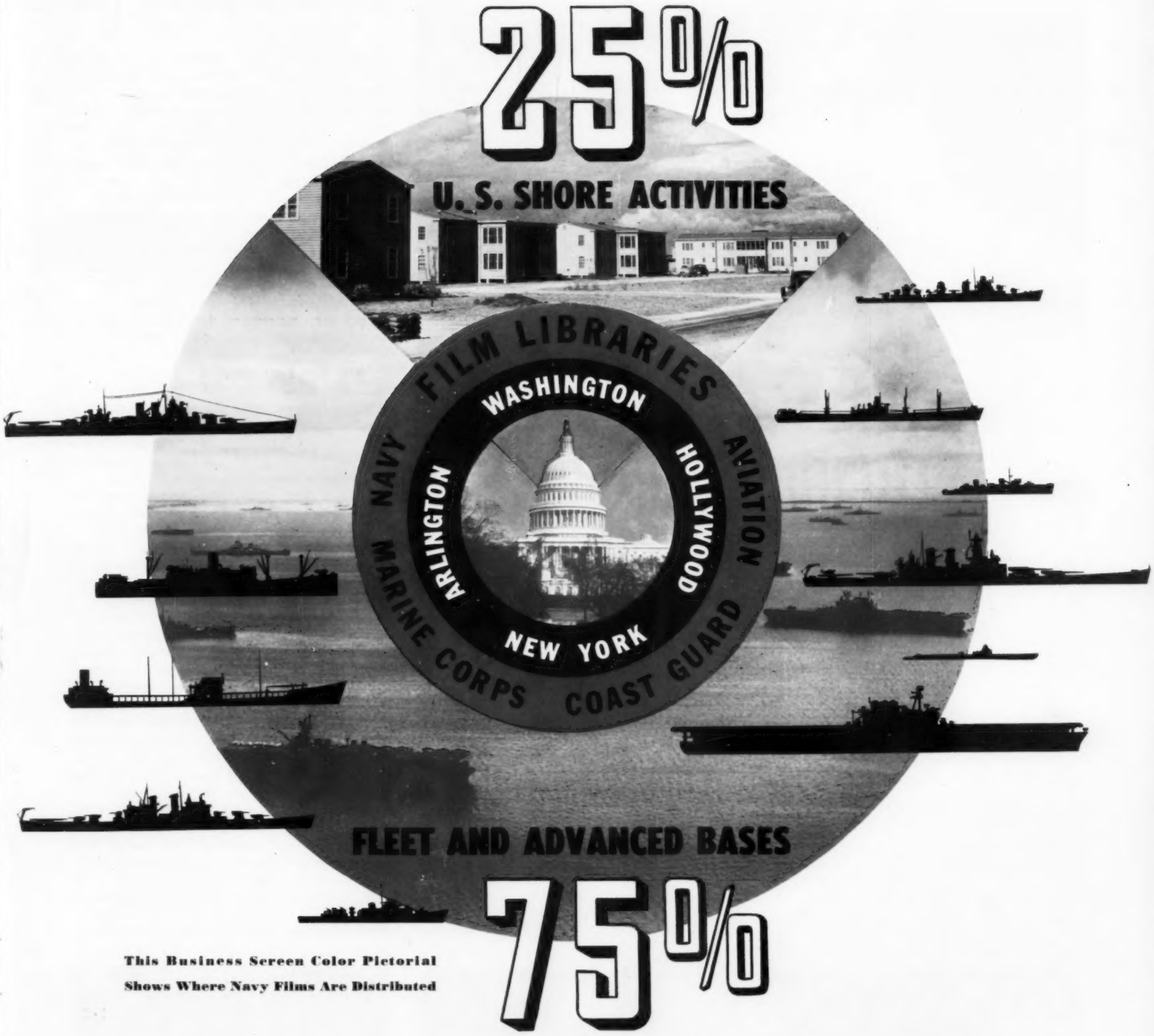
As has been seen distribution lists of films are prepared by specialized units and are coordinated by the Bureau of Aeronautics. It may be of interest to follow a typical new Navy production from the day it is officially approved and accepted by appropriate authorities to the day it arrives in the shiny new film can at Pearl Harbor.



A film on *Submarine Torpedoes* was completed on December 29, 1944. Several days later it was reviewed by officers charged with the responsibility of distribution to training schools. Actually, information had been sent to all film libraries while the film was in production listing the subject matter, the objectives and other pertinent data. The libraries had, in turn, furnished estimates of the number of prints required in their districts or areas. After review of the completed film, field estimates were combined with additional specific requirements provided by the bureau which originally requested the production. An initial distribution list was prepared by the Bureau of Naval Personnel and forwarded to the Bureau of Aeronautics where it arrived on January 8, 1945. The same day, the list was screened, the number of reserve prints required was determined, and an order was placed with the film laboratory. While the distribution list was being prepared, the producing company had been advised by mail that the production had been officially approved and was directed to forward the negative to the laboratory. The negative and the film order arrived within 48 hours of each other, and printing began on the assigned priority. By February 6, all the prints were shipped, and on the 26th, twenty days later, the assigned prints arrived at Pearl Harbor.

Initial distribution of new Navy training films represents only a small part of the functions in Distribution. Larger volume in prints is reflected in reprints required for the growing Navy as well as in prints of many films not produced by the Navy but adaptable to the training program. Over 7,000 subjects are being distributed, of which one-half were produced by the Navy itself. Films produced by other armed services, government agencies, commercial sources, and others have been used when the subject matter was found appropriate. The attendant economies in production and avoidance of duplication are obvious. The wide use of these films is indicated by the fact that 40 per cent of all prints being distributed are in this group.

What has Distribution done, and where are all the training films going? Certainly these are pertinent questions and the answers are interesting. Since December, 1941, more than 1,300,000 prints have been supplied to the Naval Establishment afloat and ashore. These prints are, for the most part, 16 millimeter



This Business Screen Color Pictorial Shows Where Navy Films Are Distributed

sound motion pictures. Films in 35 millimeter have been distributed in extremely limited numbers, for the advantages of 16 millimeter motion pictures were early realized. A substantial majority of the films are black and white. Color films have been produced and prints distributed, but numerically this group has been limited to less than 10 per cent of distributions made.

In the early months of the war, the majority of training films were being sent to shore bases in the United States. The audience was in the training centers and facilities were limited aboard ships. Developments of the past year have caused a complete reversal. Today almost 75 per cent of completed films are provided to forces afloat and advance bases, and 25 per cent go to shore establishments in the United States.

Distribution does its duty as a part of the training film program. The detailed story of its role must await another day—when other stories may be told. Meanwhile, another month passes and again thousands of prints of training films are borne by courier, by train, by ship, by plane to Navy personnel everywhere.

TRAINING FILMS IN A TRAINING PROGRAM

by Dixon L. MacQuiddy, Lt., USNR

FACED with the urgent necessity of training many thousands of fighting men as effectively as possible within a short space of time, the United States Navy inevitably turned to training aids.

The Navy recognized the value of these teaching tools. It was aware of the excellent results that had been obtained with training films and other audio-visual aids in public education; and it knew that, with them, students learned more, learned faster, understood better what they learned, and remembered longer.

Expectations Justified. Training aids have amply justified the Navy's expectations by becoming a distinguishing characteristic of its training program. In every Navy classroom and on every Navy vessel—in *every phase* of Naval instruction—training aids are on the job.

They have undergone tremendous research and development under the impetus of war, and have come to include virtually everything that can help to make the facts, methods and machines of war more real and more meaningful to men whose lives and safety depend on "know-how."

Intricate and truly marvelous mechanical devices simulate with utter realism the plane in flight or the ship underway. Models, mockups and three-dimensional aids of almost infinite variety help to teach communications, gunnery, amphibious warfare, ship and plane recognition, and virtually every other subject in Navy curricula. Charts, posters and other non-photographics contribute similarly to all phases of the total training job.

Training films were, of course, the foundation of the training aids program at its inception, and have continued to be a major part of it. Accompanying articles in this issue of BUSINESS SCREEN present from various viewpoints the story of Navy training film production and the technical aspects of distribution. It is the purpose here to extend this story with further information on distribution, and to explain what has been done and is being done about training film utilization and evaluation.

In the early stages of the Navy's training film program, emphasis was given to procurement and production. The demand for films was urgent, and immediate needs had to be met. Every effort was directed toward drawing together all appropriate films available from outside sources, producing others in greatest demand, and procuring projection equipment wherever it could be found. As production climbed, however, and films came into quite general use, problems of distribution and utilization became apparent.

Problems Developed. What were some of these problems?

1. Prints were generally being issued on a permanent basis to activities in need of them. A temporary loan and re-distribution system was needed to spread available films over a wider area of use.

2. Too many instructors were having too much difficulty in getting films when they needed them most. This was particularly true of forces afloat, and of training activities at advance bases. Distribution machinery needed oiling. Sources of supply had to be decentralized and moved nearer to points of demand.

3. Too many instructors misunderstood the functions and potentialities of training films and other aids, and had little or no knowledge of correct utilization techniques. Over-enthusiasm led some to expect too much from films and not enough from themselves. Others failed to grasp the importance of this "new-fangled" teaching device and employed it haphazardly or not at all. This situation was understandable in view of the fact that Navy instructors had been drawn from all walks of life.

4. Evaluation of films available from commercial sources, and the procurement of these films for Navy use was inadequate and needed to be set up on a continuous and systematic basis.

5. No system had yet been inaugurated for the continuous evaluation and up-grading of distribution methods and utilization techniques.

"IT IS ALWAYS A PLEASURE TO GET SOME help from the fellows." The executive officer of a fleet destroyer expresses appreciation for help from a Recognition Officer during a conference.

AROUND A DESTROYER WARDROOM MESS TABLE, A UTILIZATION OFFICER CONFERS with division heads. This procedure is generally followed after the conference with the "exec."

CREW'S MESS COMPARTMENT ABOARD DEstroyer X is the classroom. With a Training Aids Guide as a help to better instruction, a ship's officer tells crew, of salient points to look for in film.

Lack of such a system meant not only the existence but also the perpetuation of error and inefficiency. It also resulted in failure to recognize and to spread the benefits achieved through local initiative and ingenuity.

These were problems that might be expected to develop in any expanding training film program. Their development in the Navy followed the pattern that had become familiar in the civilian field. Certain aspects of the Navy's experience were, however, unique and should be noted. The urgency of war telescoped the development process and brought these problems to a head within a few short months. The same urgency dictated a speedy solution. Further, all of these problems were greatly accentuated and magnified by the sheer size and complexity of the Naval training structure. On the other hand, their solution was facilitated by virtue of the authority and the funds available.

Training Aids Division Established

• The framework for a well-rounded and fully-coordinated training aids program was erected in mid-1942 with creation of the Training Aids Division within the Bureau of Naval Personnel. This Bureau has cognizance over most Naval instruction, principal exception being naval air training which is the responsibility of the Deputy Chief of Naval Operations (Air.) The new division was charged with responsibility for the full direction of training film distribution, utilization and evaluation.

Production and Distribution Section includes the Production, Distribution, and Recognition Aids Units, and is responsible for providing the Navy with essential training aids of all types and of the most effective and advanced nature. It procures such aids from appropriate sources within and outside the Navy, arranges for their evaluation and adoption, and distributes them to Navy training activities ashore and afloat. It provides for their maintenance, and re-distributes operating surpluses as they occur. Through its Training Aids Development Center in New York, synthetic training devices, charts, posters, manuals and models are designed and developed for high priority training subjects. Instructional sound recordings are produced with the collaboration of Navy technicians and leading radio network personnel.

This Section also maintains liaison with the Army, other armed services of the United Nations, and other governmental and commercial sources in the production and distribution of training aids. In connection with the distribution of training aids and equipment of all types to naval activities all over the world, it supervises two Distribution Depots and approximately twenty-four distribution and maintenance units located at major naval operating bases in the United States and overseas.

The Training Aids Division is divided into four sections, three of which are concerned with training films. Let us first examine these sections and their functions. We shall then consider the Division's agencies in the field and, finally, turn to the organization in operation as a whole.

Utilization and Evaluation Section procures officers to serve as utilization specialists who are assigned to naval districts and fleet operational areas throughout the world. Through district authorities, it exercises supervision over these officers and coordinates their activities. It prepares and publishes training aids utilization materials of various types for Navy instructors, and gathers and disseminates information on new training aids and improved utilization techniques.

This section conducts a continuous program of evaluation to determine the effectiveness of training films and to recommend changes or improvements both in film content and in methods of distribution or use. Its function is a practical one, not merely to gather statistics, but to assemble concrete evidence on which the upgrading of film and instructor performance can be achieved.

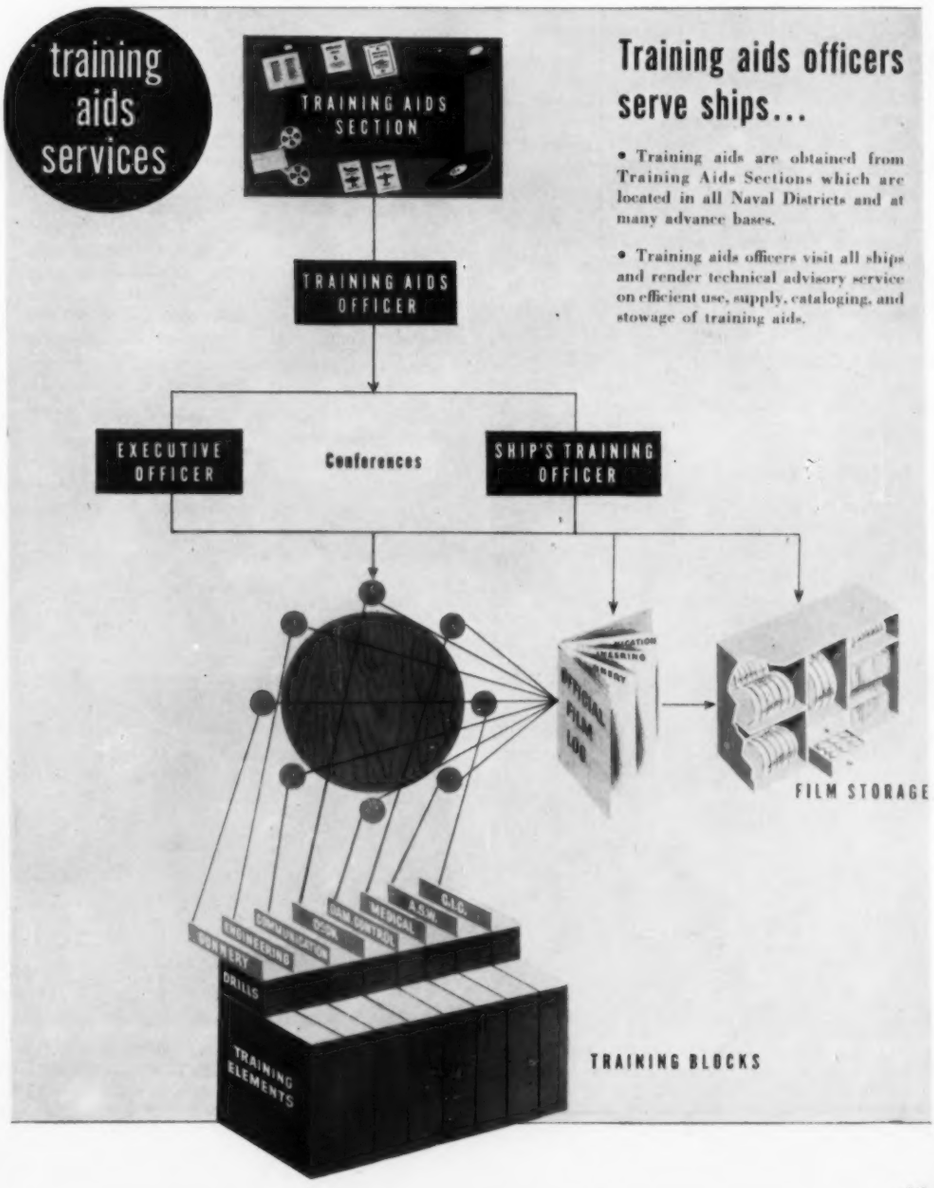
Training Bulletin Section publishes a magazine (Training Bulletin) for the dissemination of training information, advice, and inspiration to Navy instructors. It gives considerable space to illustrated previews of new training films, and to descriptions of new aids and techniques. It is a valuable device for keeping training aids officers and instructors well-informed on matters of general interest regarding training films.

TAD Agencies in Field

★ The field organization consists of approximately 120 Training Aids Officers, assisted by enlisted personnel, operating in and from Training Aids Sections and Libraries. The distinction between "Section" and "Library" is one of official terminology, not of function. There is one Training Aids Section in each naval district within the continental limits of the United States, and one Training Aids Library in each overseas naval district. A Library is also maintained in each major area of fleet activity.

Each Section or Library, with one exception, has at least two Training Aids Officers. One specializes in distribution, the other in utilization, since these are considered as distinctive functions requiring different backgrounds of training and experience.

Training aids officers and their enlisted assistants are under the direct command of the Director of Training in their district. He, in


training aids services
TRAINING AIDS SECTION
TRAINING AIDS OFFICER
EXECUTIVE OFFICER
Conferences
SHIP'S TRAINING OFFICER
Training aids officers serve ships...
• Training aids are obtained from Training Aids Sections which are located in all Naval Districts and at many advance bases.
• Training aids officers visit all ships and render technical advisory service on efficient use, supply, cataloging, and stowage of training aids.
OFFICIAL FILM LOG
FILM STORAGE
TRAINING ELEMENTS
TRAINING BLOCKS

using training aids under way
recognition
Lookouts on watch are given recognition test with models on halyards. Battle phones are used in reporting identification to the bridge.
Off watch lookouts review long range bomber slides on the mess deck.
Recognition Officer sets up a one week's display of Jap plane models in the wardroom.
Bridge gang sets "Quizcraft—No. 9" in forward crew's quarters. (MB-1432)
Recognition Officer selects models for 1400 training period. Models are stowed on wires in his stateroom.

Posters and charts like this also help visualize the Navy's immense training job.

turn, is under the command of the Naval District Commandant (or fleet equivalent). When assigned to Sections or Libraries, Training Aids Officers and assisting personnel are answerable only to their District superior officers. All directives and requests, as well as all supplies and equipment, from the Training Aids Division go through the District chain of command and are subject to the approval or acceptance of the Commandant and the Director of Training.

The Bureau of Naval Personnel, however, formulates basic training policies and regulations, establishes and discontinues training schools and Sections or Libraries, and assigns or transfers personnel.

Areas, Services, Personnel Vary

★ Areas served vary widely in size as well as in the number and types of activities served. They vary accordingly in the number of training aids personnel and in the extent and types of services rendered. There may be anywhere from two to ten Training Aids Officers, then, attached to a Section, serving activities spread over areas ranging from a few to thousands of square miles. To cover these vast distances adequately, it has been necessary for many Sections to establish Sub-Libraries, particularly in port areas where training aids must be readily available to naval vessels.

Services demanded by some individual training centers are such as to require a Training Aids Officer on a permanent basis. In these instances, officers are attached directly to the centers; but, though subject to the orders of the local Commanding Officer, they remain representatives of the district Section.

Each Training Aids Section and Library maintains a stock of training films, projectors, spare parts, utilization publications, graphic and three-dimensional aids, and other materials or equipment geared to the needs of the area served.

The Training Film Cycle

It is within the framework just outlined that an effective system of training film distribution has been set up. Let us see how this system operates by tracing a film from producer to consumer and, in so doing, observe the functions and working relationship of the component parts.

1. A training film has been produced. Only a few prints have been made.

2. While in production, an advance description of the film has been released in Training Aids Digest so that Sections and Libraries may indicate requirements.

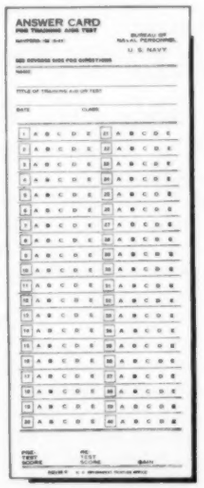
Training Aids Digest is a multilithed booklet distributed by the Training Aids Division semi-monthly to Training Aids Sections and Libraries. It is a means of supplying the Sections and Libraries regularly and frequently with up-to-date information on new policies and procedures, and on new films, guides and other aids available.

3. When production is completed, the Production and Distribution Section receives and screens the first print for evaluation by appropriate authorities.

4. The Joint Board of Review examines the film in the light of the various curricula and recommends initial distribution of prints to specified activities. At this time, the film is written into the appropriate standard curriculum.

The Joint Board of Review is a group of officers representing the various divisions of the Training Activity, Bureau of Naval Personnel, and functioning in an advisory capacity for the Director of Training. Their chief responsibility is to evaluate new Navy training films, write them into appropriate curricula, and recommend initial distribution to training activities. Other duties include: (1) evaluating non-Navy training films and recommending procurement and distribution in accordance with Navy requirements, (2) considering requests for training film production in terms of curricular needs and, through the Director of Training, advising producing authorities, (3) assigning existing training films and other aids to curricula in preparation or under revision.

5. The Production and Distribution Section considers the Board's recommendations, obtains approval of the Director, Training Aids Division, for a final distribution plan, and forwards the plan to the Bureau of Aeronautics with the request that new prints be supplied accordingly.



The answer card

6. The Bureau of Aeronautics then has the film printed and distributed as requested by the Training Aids Division.

7. Training activities not included in the initial distribution plan obtain prints for extended custody or on temporary loan from Sections and Libraries in accordance with their needs. Activities included in original distribution obtain additional prints as required.

8. In general, Training Aids Sections and Libraries submit bi-monthly orders for print needs not covered in original distributions. They may, however, submit emergency orders at any time to the Production and Distribution Section.

It may be asked why Training Aids Sections and Libraries are by-passed in the sending of prints directly to activities. The answer is that the curricula of these activities indicate a need for the film. This procedure gets the film to them in minimum time and saves unnecessary

VITAL TO FILM MAINTENANCE, REWINDING and checking film is a full time duty for one of the WAVES. With scores of films coming in each day from dozens of ships and activities, one WAVE seaman is kept busy, rewinding, checking and cleaning film.

SCREWS WORKING LOOSE CAN TEAR UP THE moving parts of a machine. An electrician's mate instructs two operators of Destroyer X in minor repairs of projectors at Training Aids Section repair shop.

TRAINING FILMS LAST ONLY SO LONG AS trained personnel handle them properly. Because maximum use is required of the ship's limited supply, the men who run projectors must be thoroughly trained.

Typical issues of the *Training Aids Guides*

effort on the part of overworked Training Aids Officers.

Putting Training Films to Work

The training film cycle is, of course, incomplete until the film is utilized properly in the classroom or aboard ship, and until—when it has fulfilled its purpose—it is re-distributed or declared obsolete and withdrawn from circulation. Bringing of this cycle to completion is the job of Training Aids Officers, drawing fully upon the resources of the Training Aids Division to satisfy the requirements of Navy instructors in obtaining maximum value from training films.

Projection equipment is a primary requirement. Shore training activities obtain projectors, screens and other equipment from the Sections or Libraries on loan or permanent custody in accordance with need. Each ship, depending on its size and class, has a standard allowance of projection equipment. Usually this is put aboard as construction is completed.

Trained projectionists is another vital need. Effective film utilization demands that the mechanics of projection be smooth and unobtrusive and that failure of equipment be held at a minimum. All Sections and Libraries provide extensive service in training officers and enlisted men as projectionists. More than 400 projectionists are trained monthly throughout the Navy, a yearly total of approximately 5,000. A training manual is now in preparation by the Training Aids Division to improve, standardize, and extend projectionist training.

Advice to instructors on training films available, proper utilization techniques, problems of film stowage and related matters is a key ingredient of the training aids program.

Visits to training activities ashore and to ships in port comprise the major activity of Training Aids Officers. During such visits the Training Aids Officer contacts the Training Officer (officer directing training in an activity or aboard ship), discusses his training problems with him and helps him to select suitable films and other aids. He provides him with training aids literature, arranges previews of films for him and his instructors, helps him work out problems of stowage, and offers any other assistance needed in working out and implementing a training program that makes full and effective use of training films and other aids.

Upon the advice of the training officer, he then contacts individual instructors, helps work out their specific utilization problems, gives demonstrations on the proper use of films, and offers any other assistance required. Special classes are also conducted in Sections or Libraries on effective methods of film utilization. These are available to all instructors.

The Navy Manual "*More Learning in Less Time*"

***Training Aids Aboard Ships* helps speed training**

Every effort is made to provide new ships with a complete service—equipment, projectionists, films, utilization advice—before they are sent into active duty. Wherever possible, therefore, Training Aids Officers service ships as soon as they are fitted and staffed. Ships are in greatest need of such help at this time. Once in action, it may be many months before they are again in a port where such assistance is available.

Training aids publications are prepared and distributed by the Training Aids Division to aid its officers in the field. Unfortunately, there are not nearly enough of these officers to go around. The average number of shore activities now serviced per Training Aids Officer is approximately eighty. Each officer assigned to forces afloat is servicing an average of fifty ships per month, the total running to 1,600 ships per month. One Training Aids Officer who has just completed a 16 months' tour of overseas duty reports having covered 50,000 miles by air during that period. Publications of various types help to cut down the discrepancy between the demand for help and the trained men to supply it.

The manual for projectionists, previously mentioned, is one of these publications. When available, it will provide in handy form the information needed by officers or enlisted men to set up, operate, and make minor repairs and adjustments to projection equipment. Through standardization, it will eliminate confusion. With its help, Training Aids Officers can turn out more and better projectionists with less expenditure of time and effort.

Training Aids Guides, a continuing series of publications, are designed for use by individual instructors and serve two basic purposes: (1) to establish an effective pattern for the utilization of films, and (2) to provide on specific films the data needed by instructors to use those films effectively. Each guide contains, in addition to technical data on the film or closely related series of films concerned, the major points-to-look for, a series of test questions for presentation to students, and suggestions on what to do before and after the film has been shown.

Well over two million guides on more than two hundred training films have been distributed.

To facilitate the testing of students on film content, and for general testing purposes, a test answer card has been developed and distributed by the hundreds of thousands. Extremely simple in form, it is a 3″x8″ card with the usual spaces for name and date, plus 40 numbers listed in order. Alongside each number are the five letters A, B, C, D, and E. Students may indicate their responses to test questions by marking or punching appropriate letters. Use of the card requires only that test items be prepared in a manner permitting response through a standard series of symbols. Training Aids Guides test items are of this type.

The "Evaluation Digest," developed recently, is similar in size and appearance to the Training Aids Guides and is also a continuing series of publications. Each digest gives instructors and students an evaluative view of a series of films in a specialized subject area. Four have been produced to date, all in the field of basic electricity. Each takes up a separate phase of the subject—such as "Electrostatics and Current Electricity," or "Magnetism and Electro-Magnetism"—which constitutes a course within this particular curriculum. It outlines the topics included in that course, [*Turn to page 88*]

BUSIEST PERSONNEL IN THE SECTION ARE the storekeepers in the shipping department. In the last quarter of 1944, the shippers handled a total volume of 20,966 separate film prints.

From the Islands to the Lab

The Story of the U. S. Naval Photographic Science Laboratory by Charles Marquis Warren, Lt., USNR

THERE was nothing you could put your finger on; no order, no despatch, no covert-mouthed scuttlebutt to the effect: "Something's up. We'll be hitting another beach in a few days." Yet men in Quonset and Dallas huts in every area on the advanced base island, crews of each warship moored in the palm-fringed harbor, possessed a series of curious and almost infallible oracles which warned them of the imminence of one more assault "jump-off" needed to forge along the watery road to Tokyo.

The oracles? Believe it or not: *U. S. Navy Training Films!*

Many of these training films were produced perhaps six months or a year ago by the U. S. Naval Photographic Division's Photographic Science Laboratory. How do the films accurately predict within a week or less the actual day of an invasion? As remarkable as the Photo Science Lab is in many ways, it isn't omniscient, its officers and men aren't "in" on Navy invasion plans a year before the actual assault.

The answer? Take a look:

All over the island the showings of Navy training films have been stepped up and are playing to packed audiences. Men who haven't evinced any concerted interest in training since they left boot camp are suddenly intensely hungry for films that teach them to recognize their enemy, his uniform, his habits, his methods of fighting. On the foredecks of the warships nightly screenings are pounding home aircraft and warship identification to silent, receptive gunnery crews. Australians and New Zealanders have borrowed the latest films on establishing beachhead communications. Even the flyers have become serious, viewing and reviewing films that instruct a downed pilot how to survive in the jungle.

Those are the oracles. When Betty Grable and Alan Ladd give way to animated diagrams and close ups of rocket-launchers, when the authoritative voice of the Narrator carries more weight than the dusky warbling of Dinah Shore—it's fairly safe to assume: "Something's up. Something big." Men become increasingly interested in all manners of preserving their well-being when the smell of potential death is in the air. So chalk up one more claim the Navy can make for its audio-visuals. Nostradamus had nothing on Navy training films as a prognosticator.

And during this accelerated projection activity the projectionists aren't the only photographic personnel galvanized into action. Aerial photographers of VD and VJ squadrons, photo units aboard the larger warships, and combat camera crews in the island based Quonset labs are busy cleaning and repairing motion picture and still cameras and lenses, checking batteries and spring drives, filters, tripods, and crating thousands of feet of film raw stock received from the States.

These are the crews that will cover the landing, secure the pre-assault and combat footage that will present classified graphic reports of the operation to the Navy Department, and, later, nonclassified newsreels to the public.

But upon special occasions an additional camera party will be found just as industriously on the job. This is one of the occasions and the additional unit, consisting of an officer, two chief photographers' mates and several Photo-Thirds as assistants, represents the culmination of a Bureau of Supplies and Accounts request forwarded less than a month ago to the Training Film and Motion Picture Branch, Bureau of Aeronautics, for a training film dealing with a specific problem in an amphibious assault operation. Training Film and Motion Picture Branch assigned the making of this film to the Navy's Photographic Science Laboratory, which in turn designated one of its crews operating in the South Pacific to handle the job.

The PSL crew differs from the permanently attached South Pacific camera units only in the subject its coverage will stress. It will undergo any risks the other crews are subjected to. It will buck the atmospheric nemeses of all South Pacific photography, namely: The ferocious glare of sun on water and coral that

forces a cameraman to "stop down" the diaphragm in fear of overexposing until he has underexposed his subject, the inexplicable and omnipresent tropical mist, invisible to the naked eye, that renders meter readings worthless and the use of filters a menace, and the possibility of a piece of shrapnel shattering a camera, or cameraman, or a cameraman's nerve.

But where the regular camera units will be shooting "wild"—that is, catching shots of every phase of the battle—the PSL unit will be shooting strictly according to a script jointly preconceived by the Training Film and Motion Picture Branch and PSL, and concentrating exclusively on the subject with which the prospective training film is concerned.

In this case, say, the subject is the problem of getting supplies as quickly as possible to the assault forces in order that they may stabilize their beachhead. Is it better to send the supplies in with the second wave, the third, the sixth? Will the crates bear up under the necessarily rough handling they will receive? Will salt water or sand affect their contents when they are dumped upon the beach? Those are the items the Bureau of Supplies and Accounts wants to know about. Motion pictures will answer these questions more accurately than thousands of words written in official reports.

Subsequently, when H-Hour arrives and the landing craft streak for the sandy beach, the PSL unit is on hand. One cameraman goes in with the initial wave and—if the situation permits—sets up his camera on the beach and photographs the supplies as they are moved in aboard later waves and unloaded ashore. The other cameraman accompanies the wave bearing the supplies, photographing the unloading in "reverse angle."

The PSL officer has selected angles, prearranged all continuities of Medium and Close Shots in a briefing session with his crew the night before. This continuity is followed as closely as possible without benefit of stable camera mounts, synthetic lighting or a knowledge of where Japanese shells and bullets will strike.

This landing appears at first to have caught the Japanese by surprise. Sporadic shelling raises water spouts among the craft of the first wave, but it reaches shore with little loss and the assault forces run across the beach, scale the rocky cliffs and push in to the edge of the jungle. The PSL photographer accompanying this wave loses no time setting up in a hastily scratched-out foxhole on the beach, getting his F-stop, his focus, sliding in a neutral density filter, ducking a 25 cal. spray of bullets, swinging his camera toward the incoming second and third waves and "lettin' her run"—pausing intermittently to rack over his long and short lenses to vary his shots, and reload when necessary.

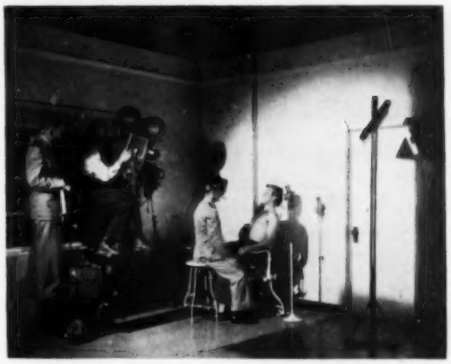
If unexpected mishaps occur to the supplies—such as crates breaking when dumped upon the beach, or damage resulting from mortar or small arms fire is sustained—the PSL cameramen are instructed to continue grinding. Such shots will prove invaluable instruction in precautions that must be taken by the Bureau of Supplies and Accounts on future landings. If, during the ruction of the landing, the camera runs out of film at (inevitably) the least propitious moment, all the cameraman can do is curse, reload and pray whatever he missed—good or bad—will occur again. And (inevitably) it never does.

Now the Jap artillery and mortars are beginning to find the range. Some of the "Elsies" in the second wave are beginning to disappear under the impact of direct hits. Some of these explosions the PSL cameraman will catch even though they may not be concentrating on the actual effect of shellfire or on any boats but the supply craft. These shots will later be catalogued in PSL's combat footage stock library.

By the time the third wave is half way in, the exact range has been found—and the wave takes a thorough belting. This is the supply wave and some of the ammunition and food stowed aboard the doggedly oncoming craft will never reach the beach.

The PSL officer and second cameraman are in this wave, both shooting hand-held cameras over the gunwales of an LCVP. Their shots will necessarily be "bouncy", due to the motion of the craft in the open sea, and later reveal a disconnected continuity of shots, due to the concentration of enemy fire (the urge to duck behind the protection of the LCVP's bulkhead

Production activity on the sound stage at the Navy's Photo Science Laboratory.



The camera focuses on a scene from the Navy film on *Deep Diving*, showing ears-nose examination.

On location in Florida for a jungle sequence in a Navy training film.

Recording the commentary for a Navy training film at PSL.

in the middle of a "take" when a 75 mm. shell bursts seventy-five feet away is normal—even in a photographer) but the long shots will tell the story of the shelling the wave ran into and the close shots will depict to what extent the supplies stood up during the run and during the unloading.

Six hours after the initial assault wave hit the beach the PSL crew's job is over. Although the fight to secure the island may still be going on farther inland, the PSL officer's primary objective is now to get those cans containing the exposed negative (and silica jel or baked rice as a precaution against the emulsion-devouring climate) to a point where they may be forwarded via air express with a No. One priority and under the supervision of an officer messenger to the Photo Science Lab, where the film will be processed, cut and assembled into a training film complete with dubbed in narration, battle sound effects and appropriate music.

The PSL officer will forward as soon as he can a detailed description of the footage obtained as well as an account of his observation on the handling of the supplies and reports he has gotten from supply officers on the scene. These camera logs and reports reveal such findings as: Supplies dumped on the beach at low tide often cannot be removed until after the tide has come in, making it necessary to construct crates that will withstand the ravages of salt water; during the heat of battle men will disregard such labels as "handle with care" and sink their grapple hooks into all crates, sometimes with damaging effect; a greater risk of loss is incurred if food supplies are sent in with the wave that carries ammunition.

Such on-the-spot observations will—upon approval by the Bureau of Supplies and Accounts and the Training Film and Motion Picture Branch—be incorporated by PSL writers

Production phase: the re-recording console at the Photo Science Laboratory.

in the final version of the script. When the film is released and distributed to Supplies and Accounts personnel and civilian contractors working for S & A, it will not only contain a graphically exact report of the problems encountered in maintaining an intact flow of supplies to the assault forces, but a solution to meet these problems devised by S & A and photographed and produced by the Photographic Science Laboratory.

The job of photographing the actual operation in the South Pacific is only a part of the overall undertaking necessary to turn out a completed training film. Once the exposed negative reaches PSL it must go through many major stages before it is ready for release. These stages require the use of all of PSL's photographic facilities.

These facilities are considerable. No major studio in Hollywood can boast of newer or finer equipment than that of the Navy's Photo Science Lab. The Lab's sound recording facilities, its background projection for process shots, and its optical printing equipment cannot be excelled by any commercial organization in the world. Its film library of Naval combat footage is the most complete stock library of its kind in existence.

No one who has ever visited the bluntly modernistic laboratory located on the Naval Air Station at Anacostia, can fail to be impressed with the variety of its amazing photographic scope. Besides processing thousands upon thousands of feet of combat film that comes flooding in daily from all theatres of war during major operations, the laboratory produces motion pictures at such a rate as to reach the impressive total through January 1st, 1944, to January 1st, 1945, of 423 completed projects. These projects included 542,328 feet of 35 mm. cut negative, and 249,092 feet of 16 mm. cut negative. And that, as the saying goes, "ain't paper towels."

The subjects of the training films produced by the Laboratory run the gamut of variety, ranging from a series of instruction films on how to assemble and operate the world's largest floating dry dock and a series photographed almost entirely under water which illustrates the correct procedures entailed in deep-sea diving—to such intricate and complicated subjects as the interpretation of radar, the operation of the latest airborne rockets, the construction of a Diesel engine, and the application of Pascal's Law in hydraulics.

There are approximately 800 Naval personnel engaged directly and indirectly in making motion pictures at PSL, including 265 members of the WAVES. Most all of these are highly specialized technicians, directors, cameramen, writers, actors, animators, cutters, sound men, musicians, electricians, set-carpenters—all ex-

Modern recording and film handling, rewinding and treating equipment at the Navy's Photo Science Laboratory studios.

Trial run: a new Navy training film gets an informal preview in PSL's modern screening room facilities in Anacostia.

perts at the jobs they performed as civilians before the war.

Does one of the training films now in production need an original musical score? The Music Section will compose and arrange the score, using the 85-piece Navy Symphony Orchestra for the final recording. Several of the original scores have been impressive enough to have been performed publicly as symphonic poems and orchestral suites, receiving enthusiastic acclaim from public and critics.

Will the film require animation? It always needs beginning and end titles which are the products of the Art and Animation Section, and many training films need animated diagrams and cartoons to assist in clarifying the subject's live action. Live action photography ceases where the camera cannot go—at the threshold of darkness and inaccessibility. Animation can and does extend to the limit of human imagination, exploring the outer boundaries of scientific perception. Animation makes it possible to see the workings of a muscle in a man's body, to view as from the moon a number of great convoys converging simultaneously through the night from all corners of the earth, to observe a theory of electricity invisible to the camera and human eye.

PSL's Art and Animation Section is probably as competent and talented as any in the world. Composed almost exclusively of former artists from the Nation's best cartoon studios, it hasn't yet run up against any intricate Navy technical problem of presentation that it couldn't lick. From January to January of the last year this section produced a total of 67,131 feet of screen footage, and that, to repeat the paraphrase, "ain't rolls of wallpaper."

Does this particular training film call for elaborate production, "live sound," trick or color photography, skilled professional acting?

PSL's sound stage takes no back seat to a stage of its size on the lot of any major commercial studio. On its 60′x100′ deck have been erected replicas of a South Pacific foxhole-dotted battlefield; the complicated interior of a Grumman Avenger torpedo plane; an exact reproduction of an entire communications compartment aboard a warship, complete to the most detailed instrument; a cruiser's bridge; a twelve-bed hospital ward, and adjoining hydrotherapy room; a ten-room suburban home; and many reproductions of Navy ships, inventions, experiments and new equipment. On the steel catwalks thirty feet above the deck the most modern incandescent and high intensity arc units are available for every kind of special lighting effect.

That exceptional equipment in process background projecting machines, mentioned before, provides a moving background behind the live action, such as: authentic shots of Japanese warships rolling through a turbulent sea; enemy aircraft in action; actual sections of Manila Harbor and a part of the beach at Empress Augusta Bay, Bougainville during enemy occupation; an enemy artillery barrage. These backgrounds, projected with realistic clarity behind the action photographed on the stage, have caused Hollywood experts to voice their envy of the Navy's process projection equipment many times over. [*Turn to page 94*]

The U. S. Naval Photographic Services Depot

by Fanning M. Hearon, Lt. Comdr., USNR

THE U. S. Naval Photographic Services Depot is the West Coast station of the Bureau of Aeronautic's Photographic Division where training films are made. The Depot is staffed by eighty persons—officers, enlisted men and civilians—whose pre-war experience familiarized them with the many facets of motion picture production. Writers, directors, project supervisors, cameramen, lay-out artists, projectionists, electricians and set-carpenters are available for all types of training film production. A procurement officer and assistants are there to negotiate for commercial production of new training film projects that are constantly received; an administrative department handles the Depot's intricate and never-ceasing paper work, facilitating the liaison between requesting authorities, the Depot, and the Depot's "home office"—the Training Film and Motion Picture Branch of the Photographic Division in Washington; a distribution department handles the shipping of training film release prints processed in Hollywood laboratories to naval activities on the West Coast as well as to the fleets in the Pacific.

The Depot itself houses a well-equipped shooting stage; a still-photograph laboratory; a special effects department where trick photography is done; two projection rooms where the previous day's photography as well as completed training films may be viewed and special approval screenings held; editorial rooms; and an art department, where many of the titles and lay-outs for animated sequences are devised.

In general, the Depot handles two types of training films: indoctrination pictures of the dramatic type calling for large casts of experienced actors and extensive sets and shooting facilities; and the highly classified technical films concentrating on teaching the working principles of an intricate new weapon or device, or explaining the complex doctrines employed in aerial and amphibious warfare.

For instance, the Training Film and Motion Picture Branch forwards a request for a dramatic film to inform young training pilots that if they choose bomber, torpedo or combat patrol planes, they will see just as much action and be just as important to the Navy's flying fight as they will if they select fighter duty. This will be an indoctrination film—an "attitude-establishing" picture. It calls for an all-out production—since every young student pilot dreams of manning a fighter plane—and to convince him there is another and equally vital duty will call for a powerfully presented argument.

If the Training Film and Motion Picture Branch forwards no shooting script with its request, it is up to the Depot to assign a writer and a project supervisor to work with the technical advisor on the immediate preparation of the script. Once the script is completed and approved, the Depot's Procurement Officer sub-

Shooting a survival film on the stage at the Photographic Services Depot.

A reasonable facsimile of a Jap officer does his bit for a Navy training film on interrogation on the Depot sound stage.

mits the scrip to various regional studios and receives from them production proposals and estimates, which are turned into Naval Budget forms and forwarded to the Training Film and Motion Picture Branch for approval.

Upon receiving this approval, shooting schedules are made out with the studio selected and the production started. At all times during production, the Depot's project supervisor for this picture will be on hand to provide liaison between the studio and the Navy, and to supervise the production from the Navy's point of view.

For the scenes depicting student pilots and their reactions to planes other than fighters, dramatic scenes calling for acting ability and "production" interiors and exteriors, the studio's most suitable actors, a selected director, camera crews and appropriate sets are utilized. Perhaps some flying cadets are gathered in a Navy-style recreation room at an Intermediate flying school heatedly arguing the relative merits of fighter and torpedo planes; or rescued pilots collected in a wardroom of an aircraft carrier in the South Pacific voice their thanks for the patrol bomber crew that daringly scooped them out of the sea a hundred yards off the enemy shore. Such scenes call for accurate reproductions of the interiors, and for acting ability that won't subject the picture to howls and hoots from hardboiled Navy audiences in flying schools and South Pacific stations. The studio supplies the set reproductions, the professional acting, the direction and photography; the Depot furnishes advisors who watch out for Naval terminology errors or slips in the dialog, technical inaccuracies and violations of Naval security.

Now, to obtain exterior scenes showing huge formations of bombing planes on their hazardous missions, torpedo and rescue planes in action—sequences that must graphically, dramatically, and irrefutably prove the arguments of the cadets and pilots in the recreation room and wardroom—it is necessary to go to a site where such flying activities may be accurately reproduced, a naval training base. This is where the Depot's Navy camera crews come in.

Navy and Marine Corps camera crews on location at San Luis Obispo, California.

Generally these bases may be found within the continental limits of the United States, but upon occasion the Navy camera crews journey to the actual site of operations—the South Pacific. Being Navy, the crews are free to move among and photograph the naval activities, shooting in a short space of time operations it would take a civilian company a prohibitive period just to obtain permission to photograph—if the permission could be secured at all.

When both the Navy and the studio photography has been completed the film is edited at the commercial studio's cutting laboratories. (When the Depot does its own editing it does it at a commercial laboratory qualified to handle classified film.)

If there now arises need of a narrator with a firm yet familiar voice that will elicit recognition and respect from Navy audiences, such a person is requested through the Navy's Department of Public Relations in Hollywood. The recording of the narration is made on the studio's sound stage.

The studio's originally submitted budget included a musical score for the film, and the score, orchestra and recording are provided by the studio before the answer print is turned over to the Navy for approval.

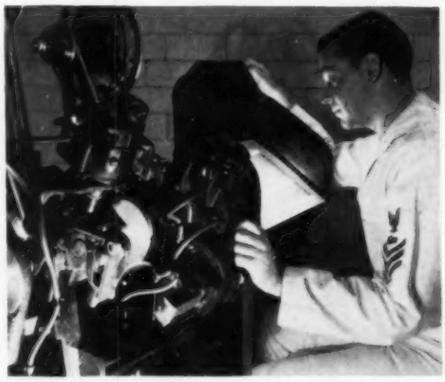
The film is now ready for distribution. It will present a convincing argument to young pilots that all the action, all the glory of flying warfare isn't found in the fighter squadrons alone. It argues with hard-hitting, realistic scenes backed up by a professional production and filled with all the "know how" that the Navy's most competent technical advisers can provide.

But, although these regional studio "feature" pictures are turned out at an impressive rate, the Depot's major activity continues to be its own production of training films. During the

last year the Depot completed a total of 96 pictures designed for training Naval personnel; 26 of these films were produced entirely by the Depot itself.

As an example of its efficiency in production, the Depot can point to one series in particular: the Amphibious Warfare training series. When the emergency call came for a series of pictures dealing with all phases of amphibious attack, the Depot's writers, directors, supervisors and camera crews—together with Marine Corps photographic units—picked up and moved at once to the various sites of the amphibious training operations, armed with nothing more than their equipment and the knowledge that the Navy needed the films *in a hurry*.

Starting from scratch, the units had to learn the subjects sufficiently well to make authoritative films that would graphically and accurately teach other members of the service all that the Navy desired them to know about this tremendous phase of attack. Subjects ranged from the medical corps' part in the assault, and complex uses of secret weapons, to the latest methods of landing troops, tanks, artillery and the newest devices of amphibious warfare known to man.



Editing a new Navy training motion picture

The Depot and Marine units not only became authorities on the many subjects, they kept pace by photographing *while* they learned, made *no* mistakes, and *beat* the Navy's emergency deadline. From the day the request was received to the day the final picture in the series was released, the units had turned out 31 pictures in exactly 31 weeks!

But the Hollywood Services Depot isn't taking any bows for that particular feat. The Navy put out the call and the Depot came through. For this accomplishment the Navy bestowed its highest accolade: "Well done!" The Depot accepted it as an incentive to keep in there, and keep swinging. And that's what the Depot's doing.

★ ★ ★

Navy Films for 7th War Loan

★ Cooperation of the Navy's Training Film and Motion Picture Branch with the Treasury Department during recent War Loan Drives is again evident during the present 7th War Loan. Eight 16mm sound films, including short subjects and "impact bulletins" were produced for nationwide 16mm showings to millions of Americans. Among the outstanding Navy films now showing are *Mission Completed, This Could Be America, Midnight, Time For Sale,* and *Remember These Faces.*

The Marines Get Action With Visual Training

by Walter S. Bell, Captain, USMCR

THE MARINES, with the help of the Navy and Army Air Force, have recently completed the conquest of Iwo Jima. This battle was the bloodiest fight in the history of the Marine Corps. The enemy had a number of factors in his favor; there had been plenty of time to fortify the island and good use was made of this time; many emplacements were so skillfully constructed and camouflaged that they could not be located and reduced by either Naval fire or aerial attacks; bomb-proof tunnels were deep under ground; the beach with its shifting sands was far from ideal as a landing beach and it was a physical impossibility to dig a foxhole in the volcanic ash.

However, in spite of these and many other factors operating in the favor of the enemy the island is ours. The Japanese had boasted that 100,000 men would not be able to take Tarawa. They did not make the same boast before Iwo Jima, but it is apparent that they thought the island adequately defended. Now they know differently.

The point of this introduction is that the Marines have demonstrated their skill as fighting men. At Iwo Jima, Guam, Saipan, Tarawa, etc., the Marines were demonstrating that they were well trained, and that they had superb morale.

The men in the Iwo Jima operation started their training about two years ago in what is known as "Boot Camp." A characteristic of the Marine Corps is that every man is a fighting man regardless of whether he is cook, baker, truck driver, or a motion picture projector operator. Therefore, all men go through Boot Camp. Here the Marine sees his first training films. He sees films on close order drill, physical fitness, health and field sanitation, customs and courtesies of the service, care and maintenance of his rifle and other equipment, marksmanship, bayonet fighting, hand-to-hand combat with knife, club, and bare hands, combat swimming, and on the organization of the Marine Corps.

An interesting sidelight about these films is that they may be either Army, Navy, Coast Guard, Marine Corps, or films produced by an ally or a commercial concern. Because of the time element, it has been impossible for the Marine Corps to produce all the training films required. Of course, Marines prefer to see films in which the characters are Marines, but since this could not be accomplished, training films applicable to Marine training were obtained from other armed services and sources. Therefore, it is not unusual to find a variety of training films in a Marine Corps training aids library.

As "Boot" training nears completion, the men are shown a film entitled, *The Classification of Marines.* This film shows the great variety of tasks the Marines perform and prepares the men to give intelligent assistance when the time arrives to decide the type of duty to which they may be assigned.

Upon completion of "Boot" training the Ma-

Marines advance from a beachhead at Iwo Jima: a scene from the Navy film *Fury in the Pacific.*

rines are assigned to either the Fleet Marine Force, Marine Aviation, or Sea School. Since the majority of the men go to the Fleet Marine Force, the training in that branch of the Corps will be the subject for further consideration.

The men selected for duty with the Fleet Marine Force will be transferred to a Marine Training Command or Center. Here they will study such military specialities as Engineering, Artillery, Communications, Supply, Advanced Infantry Training, Motor Transportation, Ordnance, Armored Vehicles, Cooking and Baking, etc. Practically every subject that is taught in high school and college from typing to physics has a counterpart in the training given in the training commands. Many sources of educational, commercial, and military films have been examined to locate the required training films. The number of showings per month in these training centers runs into the thousands and it is now an accepted fact that the use of films has and is still making a major contribution in improving the training of specialists. In some fields, such as communications, the subject matter has become so complex that it would be almost impossible to teach it in the available time without training films and other training aids.

Upon completion of specialist training the Marine is given a permanent assignment to a combat organization. Here training continues. In fact training never ends in the Marine Corps. In his combat organization the individual Marine must learn to coordinate his specialty with all the other specialties necessary in modern combat. His training is in the form of participation in field problems, maneuvers, and practice landings. More training films are used to show him how his work correlates with that of his teammates. Also his "Boot" training and specialist training are reviewed as necessary. Films are very useful for such refresher training.

When a Marine combat organization completes its basic training, it moves overseas and prepares to take part in an operation. Amphibious operations are the Marine Corps' specialty and are the most complex of all military or naval operations. Perfect coordination between naval, land and air forces is required. Every detail must be in the plans. Furthermore, since every amphibious operation is different, the participating organizations must receive special training for each operation. In many cases, it has been necessary to develop

FILMS ARE USED TO TEACH AERIAL GUNNERY.

special weapons and tactics in order to make a successful landing. Furthermore, a successful landing depends upon a knowledge of the beaches and tides, the terrain, the enemy and his weapons, the weather, and the inhabitants. Training films, called Intelligence Summaries, on such subjects have frequently been produced for use in connection with just one operation.

Our men must be able to recognize instantly our own planes, tanks, vehicles as well as enemy equipment. Failure to properly and instantly identify our own or enemy equipment may result in firing at our equipment or failure to fire soon enough on enemy planes and vehicles. Recognition training films have been used very successfully to reduce the chances of such mistakes. The showing of equipment in motion under combat conditions is a definite advantage in recognition training. The training film is an economical means for doing just that.

On each D day many of the men who have received the training already described will face the enemy for the first time. However, it is not an entirely new experience for them. They usually find that they are as familiar with the beach and other terrain as with their backyards at home. They know what the enemy looks like and what he will probably try to do. They know the weapons the enemy will use, his capabilities and limitations, and how he will attempt to use them. Marines have confidence in their own weapons and in their ability to handle them. They have confidence in their buddies and confidence in their combat teams. This adds up to a successful operation.

It is not claimed that the utilization of training films is solely responsible for all this knowledge and confidence. On the other hand, the contribution of the training films to the successes achieved during an operation must not be minimized. It would be a difficult task to measure accurately the contribution of films, but accurate measurement is not necessary to prove their effectiveness. The results of film utilization are obvious to those having had an opportunity to use them in training.

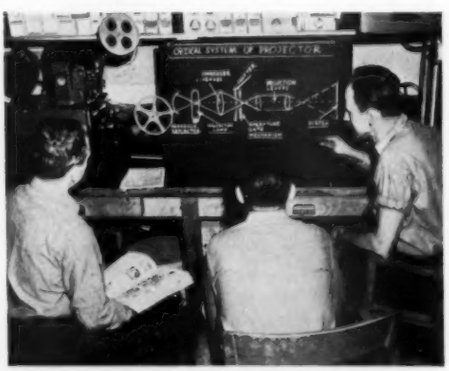
During an operation, the Marines unwittingly become actors for future training films. Teams of skilled combat motion picture cameramen are assigned to each operation. These men have a most difficult job since they are combatants as well as photographers. If the fighting gets too vicious, it may become necessary for them to start shooting with a carbine instead of with a camera.

These combat cameramen photograph every phase of the operation from the preparation and rehearsals to the completion of the operation when the garrison forces take over. Twelve Marine photographers have been killed thus far in action and twenty-eight have been wounded. The pictures these men made are being used to improve the training of other Marines.

Upon completion of an operation, there is usually a short rest period. The emphasis during this period is upon relaxation and recreation instead of training. Soon replacements for casualties begin to arrive and then training must be renewed. The new men must become an efficient part of a smoothly working combat team. Newly promoted commissioned and new commissioned officers must be trained in their new duties and there is always refresher training to be accomplished. Plans for another operation are perfected and training for participation in this new operation is started. During this training period, films photographed during previous operations are screened for the purpose of showing and correcting mistakes and perfecting the team-work of [*Turn to page 108*]

MARINE TRAINING AIDS LIBRARY, CAMP LEJEUNE, N. C.—Training aids equipment must be kept in good repair.

MARINE TRAINING AIDS LIBRARY AT CAMP PENDLETON—A large variety of training films are required to prepare Marines for duty on the land, on the sea, and in the air.



MOBILE FIELD LIBRARIES are attached to Marine Divisions and Marine Amphibious Corps for the purposes of supplying training aids during training

The Coast Guard Uses Training Films

by Patrick Murphy, Comdr., USCGR

WHEN the present war began, the Coast Guard faced many of the basic training problems common to all the armed services, plus a number of others. There was to be an influx of new personnel far exceeding anything ever experienced before; the techniques and equipment of modern warfare would require a very high degree of specialization; and the Coast Guard, in addition to taking an important place as a combat force, had recently acquired new activities which were to increase vastly in importance as the war progressed.

Not only did the Coast Guard have to provide military training and instruction in the usual nautical subjects such as seamanship, navigation, ordnance and gunnery, marine power plants, and communications, and train the many kinds of engineers, mechanics, and technicians, but it had to provide for a number of special activities not functions of the other armed services, such as life-saving, the maintenance of aids to marine navigation, and port security work. In addition, the work of the former Bureau of Marine Inspection and Navigation, which had been entrusted to the Coast Guard, required a large headquarters and field force.

To meet the suddenly required expansion, large training stations were quickly established in several sections of the country. The influx of new recruits began immediately, and with the arrival of a new man, his training, of necessity, began. The older methods of training, with drills, outdoor exercises, class-rooms, shop experience, and the actual handling of equipment began. But there was need for an immediate augmentation of the program. Visual methods of training were adopted, including special training aids, posters, and models. Chief of the visual aids, however, were the motion picture training films, the slide films, and the related material prepared for their proper use.

Training films and slide films were given a prominent place in the training program not only because they were considered an effective way of inculcating knowledge, but because personnel could be trained 30% to 75% faster than by other methods alone. This speedup in training which the films made possible was not cramming, in the usual sense of the word, for it was actually proven to be accompanied by improved retention of the material covered.

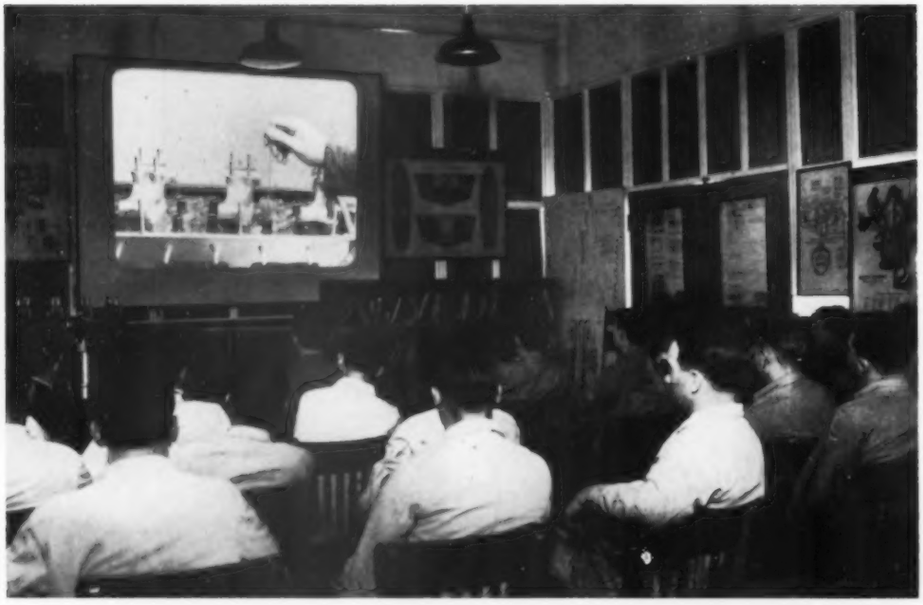
The extreme rapidity of the expansion of the service was one of the important factors controlling the training aids program, for within a short time after our entrance into the war, Coast Guard personnel had increased fifteenfold. As a result, a handful of regular officers had the responsibility of organizing and training a force larger than the peace-time personnel of the Navy.

So vast was the problem of providing training films that it was not to be expected that any one service or organization could develop a program independent of the others. Neither was it to be expected that the military services could produce the desired training material entirely by means of their own facilities, even making allowance for the fact that many workers in this field were taken into these services.

The Coast Guard first sought training films for immediate use, and determined to procure them from any and all available sources. The various government agencies were canvassed, and then contacts were made with such industries as had used training films for the training of sales forces, mechanics, and for the education of the consumer. The United States Office of Education was one of these sources of material, for it had been concerned, for several years, with the problem of teaching by films as distinct from the more common combined functions of teaching and advertising.

When the immediately available material was exhausted, the Coast Guard planned for the production of new films. To accomplish this, it sought the cooperation of the commercial film companies who were already experienced in this field. The rapidity of production of new films depended, to a large extent, upon the wholehearted manner in which these organizations cooperated in completing the contracts awarded to them. Several of these organizations had previous experience in the production of films of this general nature, but all improved their techniques and expanded their facilities to keep pace with the new ideas and the volume of work which the Coast Guard and the other armed services placed upon them.

It is notable that the first original Coast Guard training films went into the field within 90 days of the start of the visual aids program. By that time there was a fairly comprehensive selection of training material which was being routed to the various training stations, and the situation was improving weekly. In order that visual training material [*Turn to page 114*]



A Completely Visualized Training Program on the PT Boat Engine

by Don G. Williams, Lt., USNR
and Martin M. Hill, Lt., USNR

THE TRAINING program of the United States Navy for handling the Packard Marine Engine may prove to have been a very long stride toward the development of many other similar training programs. It is unique in two respects: It covers an entire curriculum, and the curriculum is based upon visual media to which printed material is merely supplementary. The curriculum content is concisely and clearly presented so that it may be used either by experienced teachers or by individuals who had no teaching experience previously. Both films and printed materials for the entire course are assembled in sets, each of which is contained in four carrying cases, not much larger than the average suitcase.

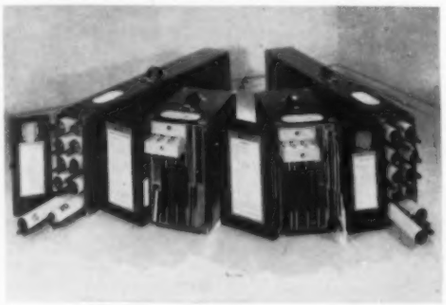
The story of the development of this packaged curriculum begins with the sudden importance after Pearl Harbor of the PT boat as a vital weapon. The PT boat is powered by three engines of the precision-built aircraft type, and the offensive strength of the boat depends upon the high speed with which it can hit and run.

Eleven men comprise the crew of each boat, and each man must be able to serve at any station on the boat in case of emergency. Men from behind soda fountains and bookkeepers' desks, from barber shops and lumber camps, as well as experienced mechanics, had to be thoroughly trained so that they could handle not only the operation and maintenance of an engine, but, if the situation demanded, its complete overhaul.

The tremendous increase in the production of PT boats required increased speed in the training of Navy crews. The Bureau of Ships requested, therefore, that the Bureau of Aeronautics produce motion picture films or sound slide films, with supplementary visual aids and printed material to visualize the entire program. The visual equipment was to be organized and designed to fit plywood carrying cases made to stand overseas shipment. This request required the active cooperation of the Bureau of Ships, the Bureau of Aeronautics, the commercial film producer, and the manufacturers of the engine and its sub-assemblies. Each of the organizations cooperating in the program assigned one or more representatives to supervise its share of the production responsibility. Technical specialists, training film specialists, engineers, and the staff of the producer faced an extremely complex problem.

To set up the program the first step was to get answers to such questions as these: (1) What are the mechanical problems in operation, service, and overhaul of the Packard Marine Engine, and how can these be presented in appropriate sequence? (2) What will the trainee have to know, and what will he have to be able to do in order to fulfill his duties successfully? (3) What are the instruction and equipment facilities in the schools and at the advanced bases? The survey revealed many problems, particularly in relation to this third question, because the conditions under which the instruction would have to be given ranged from schools in the United States with excellent instructors and equipment to advanced bases where there were instructors with little experience and no training equipment. At some stations there was nothing to start with except the desire of the men to do a good job, and dozens of engines that needed overhauling.

In convenient, compact carrying cases like these complete PT Boat Boat Engine instructional materials are made available to training classes at bases throughout the world.



After the survey, a planning conference brought out many suggestions for the type of instruction that would be most useful to the men under battle conditions. The producer proposed types of material that could be used; the Bureau of Ships' representatives and those of the manufacturer defined the scope of the program; and the men who had had battle experience in PT boat squadrons defined the needs in the fleet.

The following decisions were reached: First: The basic medium should be sound slide films because they are small, light, easily packaged, and are adaptable to either group or individual instruction. Second: Each trainee should have a set of review notes to enable him to study on his own the important information contained in the slide films. Third: An instructor's guide should be provided to assist untrained instructors. Fourth: Printed copies of the narration of each slide film should be included in the instructor's guide, with the important, or key pictures indicated, along with the points to be stressed in instruction and in review. Instructors with limited experience would then have available in the printed narration a source reference for information in each film. Fifth: The slide films, used without the sound recordings should be suitable for use as a review medium. Last: The entire program should be as compact and light as possible.

After the preliminary planning, production was undertaken in the producer's studio, at the engine factory, and at PT bases in the United States with the following results.

Sixty-nine slide films with recordings to cover the mechanics of operation, servicing, and overhaul of the Engine were produced. These films were grouped in the following categories: (1) General description, (2) Operation, (3) Inspection and Servicing, (4) Trouble Shooting, (5) Removal and Installation, and (6) Overhaul. Each element of the engine, such as the Ignition System, the Oiling System, and the Cooling System, was covered.

A thirty-two page illustrated booklet was written to give the instructor a complete overview of the program, organization of classes, testing procedure, teaching [*Turn to page 98*]

Some Training Films Are Better Than Others

by Harold B. Roberts, Lt., USNR

SOME DAY somebody may be able to answer the question "Who can make a good training film?" Simultaneously he will be able to answer its correlate, "What makes a training film good?"

The relationship between the two queries calls to mind the Hollywood maxim which says "A producer is no better than his latest picture." The truth of the adage, unimportant here, may be left to those who know something of the cinematic city. Its implications bear noting. It implies first that Hollywood producers (or actually any of those who contribute to production) are interested in the measurement of their success and, secondly, that they realize that they will find their own success inescapably linked to that of their product.

Certainly no one can thoughtfully insinuate that the training film, good or poor, is any more related to the Hollywood entertainment product whether good, poor, or Class C, than McGuffey's Reader is to one of the Rover Boys series. However, there is every reason to believe that the maker of training films is equally concerned with his success or failure and that he searches with equal solicitude for evidences of the success of his product.

Both queries are fair questions, but the answers remain obscure. They rest within closed doors that can be opened only by further scientific measurement. They can be attained, must be, and the sooner the better. But until more results of scientific measurement can be applied to training film production the training film maker who is serious about his assignment must make the best films he can through the study of recognized excellences in motion picture craft and of the discoveries of science in the field of human behavior and learning.

The success of the training film is dependent upon the subsequent success of the training film audience. Unlike the entertainment movie, the success of the training film is dependent not upon the size of its audience nor upon gate receipts nor upon the nods of the critics, but rather solely upon the proficiency of the audience. Again, unlike the commercial movie, the success of the training film is dependent not on the smiles, the comfort, or even upon the cheers of the audience, but rather upon the quality of the subsequent performance of duty of each individual in the audience. The contribution that the film makes to carrying forward the Navy's part of the war through the performance of its men is the only real measure of the success of a Navy training film.

It must follow that the success of the maker of training films can be measured only in terms of the success of the boys for whom the films are made. Successful performance of duty by naval personnel is the only acceptable final objective of the training film maker. The naval activities assigned to the planning and production of training films dare not lose sight of that objective. Every person assigned to production, whether officer, enlisted man, or civilian must, in effect, ask himself as he works on a film, "What will this one do for the boys?"

Having accepted successful performance of duty by naval personnel as his objective, and having accepted the assignment of producing a film, the training film maker must make certain basic assumptions.

He must assume that:

(a) The trainee will be different after having seen the film. The trainee will know more, will have a different attitude and, far more important, he will act differently. The picture, in, of, and by itself, will change the trainee.

(b) The film may be required to set a standard pattern of performance on all ships and stations. The performance of thousands of men may be influenced by the picture.

(c) The objectives of the training officer are parallel to his own. The training film maker and the training officer work for the achievement of the same goals.

(d) The film will solve or assist in the solution of training problems not yet successfully solved by books, charts, lectures or demonstrations. The problems to be solved by the film may be perplexing and obscure but they are always exacting.

Both the objective and the assumptions denote a problem that is basically psychological.

"Common sense" psychology represents a field in which many rate themselves as experts. Naturally, nearly everybody having lived, developed and competed in a social world has perfected a scheme of exercising social controls which work at least part of the time. But the same dependence upon and faith in "common sense" psychology has retarded the progress of educational and training activities for centuries.

A consideration of a few of the findings of science, in the study of human behavior, may prove valuable to those who create in the field of the training film.

Man is in a most favorable learning condition when confronted by a problem, the solution of which will contribute to his personal welfare.

The newly commissioned reserve officer, ordered to report aboard a ship for the first time, obviously would welcome a film which would give him detailed instructions on prescribed procedures. In such a case, the trainee himself has isolated and recognized his problem. The training film maker has but to recognize the same problem and to present the solution.

Those responsible for *First Leave*, a film on good behavior during, and prompt return from leave, were faced with a far more complex situation. The audience of "boots" could be expected to recognize no problem related to going home on leave for the first time previous to the showing of the picture.

Upon the training film makers rested the burden of isolating the problem or problems which would be faced by the "boots," presenting them in such a way that they would be recognized and accepted as personal problems by the "boots" and finally presenting the solutions.

A "how to do it" film may successfully present a problem in a very simple way, as exemplified by the Army picture which showed piles of supplies of various sizes and shapes ready to be loaded into boxcars while the narrator said simply, "Loading this mixed cargo is a cinch if you use plain common sense."

Simple or complex, those films which indicate that the producing personnel recognize the necessity for isolating and establishing a problem which would become that of the trainee appear to be superior.

Man is interested when he is learning, but interest does not guarantee learning.

Simple and obvious enough on the face of it, this concept receives scant support in many training films. The epitome [*Turn to page 100*]

The Training Film Formula

by Orville Goldner, Lt. Comdr., USNR

IT IS evident that there can be no formula as such for creating an effective training film. Indeed, there should not be. However, for the training film problems that confront a producer, an orderly procedure can be established to assist him in thinking through the factors that are involved in the production of the desired training film. This is true because every training film undertaken in an organized production program passes through the same stages of development and requires the organization and direction of similarly experienced personnel and the manipulation of similar equipment. And as the training film project passes through these stages there are ways of analyzing and solving production problems and synthesizing answers through the use of personnel and equipment that will add up to training instruments that will meet clearly defined needs and objectives. The basic assumption of this article is that *facts* and *order* are essential to every phase of training film production, and that predictable skills and equipment are incontrovertible requisites if success in influencing human behavior, which is the ultimate objective of all training, is to be achieved.

On the basis of this assumption an attempt has been made to look at the Navy's training film production job, to check the specifications, the parts, the designs, the purposes; to look at the job not from the volume point of view and the maze of mathematics which indicate manhours, miles of films, and millions of dollars, but from the unit point of view—at that significant item, the training film itself.

At this stage of the training film job with thousands of specimens at hand, it makes good sense to analyze as scientifically as possible that ephemeral screen experience for training to see "what makes it click." For only by dissection, analysis, and definition can we hope to get closer to understanding and creating the special film that is to be the sharp and dependable tool for training.

Upon analysis we find that the agglomeration of sight and sound experience which reaches and emanates from the screen is not something formless and indescribable—certainly not esoteric, but that it is the result of skills and techniques which for purposes of clarity we shall refer to as "ingredients." We shall separate these ingredients and determine the *formula* of the training film, and how the formula is varied to give us the pattern, that is, the total style of presentation. And the pattern must not be confused with the formula because the pattern is a result of a use of the formula, the important points being: First, that this resulting pattern may be either singular and completely effective or prosaic, and partially effective, when evaluated for a predetermined objective; and, second, that different patterns can result from a use of the training film formula even when the objective remains the same.

Now, perhaps there are some who wonder why it is necessary to go to all the trouble of analyzing and defining the structure of training films when it is so much easier to shoot pictures from an outline or "off the cuff" and then cut and recut, write and rewrite, until you get what you want, or should we say a fair compromise with what you want? It may be easier to make "films" this way and it may be more fun. However, just "films" are not training films, and rolls of celluloid covered with uncorrelated photographic images and meaningless words and sounds seldom meet a training need. Further, you cannot carry on an extensive training film production program by using such haphazard, hit-or-miss methods. To qualify this statement a little, let it be said that you can carry on an extensive training film production program along such lines, but not when time, money, and maximum effectiveness must be considered at all times. This is the position of the Training Film and Motion Picture Branch of the Navy and this is sufficient justification for analyzing the training film, for separating the predictable elements from the unpredictable, and for studying the mental, manual, and mechanical aspects of the training film production job.

To get an understanding of the difference between the training film formula and the pattern—it is logical to resort to an analogy.

Let us take a mural as an example, the type of mural we find in many post offices—the one which portrays the history of the United States Mail System from the days of the Pony Express to modern air mail. When such a mural is viewed by the thousands of persons who come in contact with it, it means not only many different things, but it means these things with greatly varying degrees of intensity. Many of the individual meanings may be quite different from those the artist had in mind when he painted the mural. Some persons may read into the mural all kinds of meanings that are subsidiary to the main historical story which the mural is designed to tell. Others may read into the mural "extra" meanings which are so important as to make the main theme itself *effectless* as far as they are concerned. There will be some who will find in the mural very personal meanings and much that is sentimental. Still others will find it only "interesting" or meaningless. Inevitably, there will be a few who will enjoy the mural for what it is—a fine art form, a use of skill and imagination expressed in oil paint on canvas. The enjoyment and meanings for this group will be clinical. This group will be far more interested in what the mural is intrinsically than what it attempts to say and mean extrinsically.

So our mural will mean a thousand things to a thousand individuals. Its importance as an effective contributing experience in American history will depend on many factors. Most of all it will depend on the *commonness* of the forms, *i.e.*, the signs and symbols, which are used to interpret the theme—the story of the U. S. Mail System. And the *commonness* of the forms depends entirely on what the audience brings to the mural in the way of mental and emotional experience and educational background. In other words, there will be much or little meaning in direct proportion to the commonness of the elements of the mural to the existing and potential life history of the total audience, which in turn depends on the age, the heritage, the environment, the education, the vocations and avocations, the habits, desires, attitude, and ambitions of every individual.

We can then conclude that to give the most meaning to the visualization of any subject matter it is necessary to ascertain as completely as possible the common denominators of the total life experience of the audience for whom we are "visualizing."

From this analogy we see that the *pattern* of the mural and the resulting meanings in their little or great importance and varying intensities depend on the artist's ability to *talk the language* of his audience using only visual signs and symbols. This indicates unequivocally that he must know a lot about his audience. Among other things he must know how they express themselves and how they learn—that is, what visual forms and qualities in a context of new experience have meaning for them.

It is evident that we can translate directly the requirements of the mural painter to the instructional film maker. But the film maker has one more problem. He has to understand the values of audible forms, the spoken language and sound, when they are used *with* pictures. He has to synthesize carefully, adding just the right kinds and amounts of words and sounds to pictures to guarantee more meaning and more learning. And always, this job, too, must be done in the terms of a given audience. If the film maker does not understand the importance of a harmonious marriage between pictures and sound for a purpose, for *an* audience, only one thing can result—a panorama of innocuous visual images accompanied by a cacophony of sound, an experience which may

keep an audience awake but which will be quite without lasting meaning and learning.

It should now be clear that the product of the film maker's art and craft—that experience which reaches the screen—is a cohesive force, a delicate synthesis of design and technique, a total pattern that may be coherent or incoherent, meaningful or meaningless, with or without quality which can be described or *evaluated* only as it affects an audience.

To illustrate further the difference between the formula of a training film and its pattern, and how many individual patterns will result from a use of the same formula, let us return again to the analogy of the historical mural. Let us assume that we have a post office in a town in the Middle West for which we want such a mural painted. We offer the job of painting on a competitive basis. Five artists are given complete specifications for the project. They are given all the exact dimensions of the space into which the mural is to fit, the quality of the canvas and paint that is to be used, a time for completion of the work and a color scheme, or at least a definite indication of the colors of floors, walls and ceiling with which the mural must harmonize. In addition, they are furnished with a detailed story of the theme.

The 5 artists on receipt of the mural's specifications begin word and picture research. It is entirely possible that they will use the same source materials. *But at this stage something happens.* Each artist draws from the source materials the parts which seem cogent to him and he begins his plans and sketches. The picture and word facts which he gathers are segregated, expanded and combined, over and over again until he achieves a satisfying totality —a complete visualization of a group of ideas which pleases him aesthetically. When he has achieved what is to him a balance between fact and imagination expressed graphically, he is ready for paint, brushes, and canvas. The important point here is that each of the 5 artists will arrive at a different balance between fact and imagination, and each will express his graphic totality in a different style and different colors—yet all 5 artists will be fulfilling the requirements of the mural competition. However, each artist's work, if completed for the given audience passing through the post office of the middle western town, will have a different effect—that is to say, will mean to the audience different things with different intensities. These meanings and their effects in total may be described by the audience in empty sentence without qualifications, such as "I like it"—"It's beautiful"—"I don't understand it," etc., but of one thing we can be sure: One of the murals will mean more and mean it more effectively than all the rest.

Our conclusion must be that: The same specifications, research data, tools, equipment, and material used in the development of a given "theme" for a specified objective result in greatly different end products because of 2 factors—the quality of the craftsmanship expressed in the use of tools, equipment, and materials, and the appropriateness of the imagination applied to the interpretation of research data which we assume to be the truth. And a training film, like a mural, is the result of basic factors or "ingredients," the accumulation of which we refer to as the *formula,* and the result of which we refer to as the *pattern.*

A qualitative analysis of any training film reveals the following ingredients in the order of their application in the training film production process:

(1) *The truth* about a condition or set of conditions.

(2) *Interpretation* of the truth as it relates to human behavior.

(3) *Visualization* of the interpretation of the truth in a way that will permit individual identification with it.

(4) *Verbalization* of the interpretation of the truth in terms and in a manner that will permit the relatively effortless development of definite behavioral concepts.

(5) *Emphases,* both visual and audible, which emanate naturally out of the interpretation of the truth (2, 3, 4 above), and which will add to the immediate and retention value of the whole.

For a better understanding of the 5 ingredients of the training film formula, we shall examine the details of each to determine its characteristics and the skills required for its compounding.

(1) *The Truth About a Condition or Set of Conditions.*—Obviously, this is the first thing to be determined in the production of a training film. The truth about any subject can be learned only after all the available sources of information have been tapped. To get at the truth about a condition or set of conditions as the basis for a training film, it may be necessary to do a number of different things—

(a) Read books, manuals, reports;

(b) Visit locations where the subject matter may be studied in fact and in operation (as opposed to its presentation in writing and conversation);

(c) Conduct interviews with persons having an operational knowledge of the subject matter;

(d) See motion pictures and other audio-visual materials on the same, similar, and allied subject matter.

The nature of the job of determining the truth indicates plainly that it requires a person who knows how to "search out" and appraise existing information on the given subject matter. It requires a person who is not satisfied with surface observation and the easily accessible, but rather one who has the ability to penetrate the common and accepted facts and alleged facts. Frequently, in Navy work the job of determining the truth for a training film is difficult—more difficult than might be expected because weapons, in the sense that machine guns and battleships are weapons, tactics and personnel change almost from day to day. This means that doctrine changes rapidly, and that what was true yesterday entirely or in part may not be true today. This means, also, that as the history of a training film is written, over one-third of the time it is *in production* is entered against "research."

Whatever the difficulties of establishing the truth, it is the first important step in the production of a training film, and if the truth is

literally in transition, it must be "frozen" as of a given moment in preparation for the next step. A knowledge of training film methods is not necessary for the work of this first step, but mental acuity and a knowledge of research techniques are positive requirements.

(2) *Interpretation of the Truth as It Relates to Human Behavior.*—In the process of interpreting the truth as it relates to human behavior, there is implied at once a given audience because human behavior is different at different ages, and it is dependent on many factors including the education, experience, heritage, and environment of the individuals making up the audience. In practice, interpretation of the truth for a Navy training film amounts to a precise but complete statement of the film's content based on results of the initial research (the truth). The content is delimited, that is, only such segments of the truth are set down for inclusion in the film that are considered important for influencing the behavior of the defined audience. The business of interpreting the truth, and delimiting to establish the required segments for *an* audience demands a thorough knowledge of the objective of the film and the relationship the film will have to a curriculum if it exists. If no curriculum exists and the film is to "stand on its own feet" and be a complete meaningful experience without supplementary assistance, a different interpretation of the truth will have to be made. In all probability the interpretation will have to be more general with some attention given to introducing and summarizing the subject matter. There is a wide variety of unique circumstances and audiences, each of which requires a special interpretation of the truth. In this second step of training film production such special requirements are determined. In this step, though not in the first, a knowledge of the construction of training films is essential.

(3) *Visualization of the Interpretation of the Truth.*—This ingredient of the training film formula demands "picture mindedness." To achieve a complete and forceful visualization of terpretation and delimitation, it is necessary to "see" in detail the totality that is to become the screen experience—the training film. This process of seeing "in the mind's eye" all of the correlated details and their interrelationships must be translated into words in a script which can be read and understood by a cameraman, any cameraman—in fact, by anyone concerned in production whether he is conversant or not conversant with the subject matter.

For the visualization of complex material in a script it is often necessary to use drawings and photographs. This is a sure procedure when words alone will not make graphic the obscurities of abstract problems, e.g., *Location of Points on the Celestial Sphere* (celestial navigation), *The Occluded Front* (weather), The *Chain of Asepsis* (surgery). Regardless of the method used to visualize the interpretation of the truth in the script, it must contribute to the production of *moving pictures* which will permit the individual student to identify himself closely with whatever he sees. For he must "feel" the visual experience as a mental-emotional entity. There must be an experiential bond, a kinesthetic response to the actions pictured. Vicariously he must get as close to actual experience in a specific area as is possible. Only if he does, is the visualization of the interpretation of the truth, the pertinent delimitation, adequate and effective for learning. This step in the production of a training film requires the skills of writers and artists who can put in a script whatever will assist production technicians in getting to the screen the right "moving pictures"; and the skills of technicians who, with equipment and materials, can translate the visualized scripts into specified quality "moving pictures." Cameramen, animators, carpenters, scene painters, laboratory technicians, and many others, including actors and directors are a part of this job. Visualization is the third and, by all measurements, the most important ingredient in the training film formula.

(4) *Verbalization of the Interpretation of the Truth.*—Verbalization as it applies to training films means, simply, the use of words with pictures to explain, interpret, and extend their meanings. However, because words come easily and may be changed and shifted easily, there is always prevalent the danger of putting into words what should be in pictures. This fact accounts for training films that are packed with words like cars on a busy street—one against the other until none stands out, until any one is like all the rest.

Three conditions are important in the use of words in training films:

(1) The vocabulary must be "geared" to the audience. The words used must not be "over their heads," or have a "talk-down" effect.

(2) Words should be used only where absolutely necessary to an understanding of the picture. Words should not be used for themselves alone.

(3) Voices and voice quality used for narration and dialogue must give the impression of understanding the subject matter. They must be "voices of experience" talking personally *to*, and not impersonally *at* the audience. There must be no "selling" but rather sincere and straightforward "informing."

As has been stated, the interpretation of the truth should be verbalized in a manner that will permit the relatively effortless development of definite behavioral concepts. In other words, the audience should not be conscious of 3 experiences—seeing, hearing, and understanding, or attempting to understand. If words fit pictures and both fit the audience, effective learning will take place painlessly. If words fit pictures and both fit the audience, the development of behavioral concepts will be orderly and natural, and understanding expressed in action will be inevitable.

For this step in training film production there are required the skills of "seeing" writers, picture-minded writers, who know that what is *seen* of "Fourth-of-July" fireworks is more important and lasting than what is *heard;* and voices and technical equipment that can put on training films the words which, when released with eclectic moving pictures, are easily understood and pregnant with meanings.

(5) *Emphases—Visual and Audible.*—This last ingredient in the training film formula is by far the most difficult to explain because it covtiveness of the films. And yet how many training films have been unpleasant and irritating experiences because they were full of senseless ers many techniques—the gamut of optical effects and screen devices, music and congruous sound, and many others. All of these are used in training films, sometimes well, often badly, but always, purportedly, to increase the effec- "opticals," so-called humor in picture and sound, loud ill-fitting music, and other "effects"?

On this ingredient of the training film formula, Emphases, the important point is that they must "emanate naturally out of the interpretation of the truth—and add to the immediate and retention value of the whole." The fade-in and -out, lap dissolve, wipe, montage, double exposure, and the wide variety of other screen devices, all may serve useful purposes in the training film. So, too, may music and humor, but only if they contribute in some direct and natural way to the assimilation and retention of the subject matter being presented. It must be admitted that many of the values of these devices though accepted as genuine and important are yet unproved. It is safe to conclude that straight cuts and restrained use of other effects will add up to better training films if the jobs of *visualization* and *verbalization* are done with incisiveness to interpret delimited truths for given audiences.

The fifth ingredient of the training film formula and its devious techniques requires many skills and much equipment. It requires the special and peculiar training of technicians ranging from cutters to musicians and soun- effects men. Whatever it requires in the way of mental, manual, and mechanical skill and equipment, it requires most of all a profound and discriminating sense of combining, synthesizing, on a continuous piece of film many pictures and words for an experience which will contribute in a tangible way to learning.

These, then, are the 5 *ingredients* of the training film *formula,* the imaginative and creative use of which results in the training film *pattern.* The ingredients of the formula can be predictable to the extent [*Turn to page 109*]

Films in Naval Aviation

by Reginald Bell, Lt. Comdr., USNR

IN 1940, as the Navy's intensive shipbuilding and airplane construction program got underway, its aeronautical organization was faced with a staggering training problem. To fly the planes of its contemplated carriers, 10,000 pilots were needed annually in place of the 350 or so who were being turned out of its two air training schools. The quota of enlisted machinists, radiomen, electricians, ordnancemen, photographers, aerologists was raised from its peace time few thousands to hundreds of thousands. All were to be brought in by recruitment from civilian life. All had to be trained in naval aviation techniques and skills new to them, and vital to the Navy's success. Speed and accuracy of training were essential.

Early in 1941, under the insightful leadership of Admiral (then Captain) Radford, the Aviation Training Division made a far reaching decision: it saw no way to do its training job save through reliance on training aids. It would use two types primarily: synthetic training devices, and audio-visual aids. The thrilling story of the first of these is not being told here. . . . Sufficient to say that the contribution to aviation training of the Special Devices Division under its guiding genius, Captain Luis De Florez, has been incalculable.

Rather, this article will detail some of the facts about production, distribution, and use of audio-visual aids—motion pictures and strip films—in the naval aviation training program.

As already indicated, the aeronautical organization had two broad groups to train: its enlisted personnel, and its officer pilots. Basic training for the enlisted men was at first largely accomplished in the Aviation Service Schools, later to come under the direction of the Naval Aviation Technical Training Command, with its schools and training centers set up at air stations and in strategic cities across the country from coast to coast.

Pilot training was organized under several commands, each of which had charge of a stage of cadet or pilot training.

The first of these with which a pilot candidate came in contact was the Primary Training Command, which coordinated the first nine months of his training,—conducted successively in a score of Flight Preparatory Schools in selected colleges and universities, in the CAA-WTS courses in nearly a hundred schools and colleges, in the Navy's five Pre-Flight Schools, and in the dozen or so Primary Flight Training Bases.

The Intermediate Training Command took up its five months' job of training at this point at its two huge bases, located at Pensacola, Florida, and Corpus Christi, Texas. On completion of this stage of training, a cadet was given his wings as a Naval Aviator about 16 months after he had begun his naval training.

Early experience showed that the new naval aviator was not yet ready for carrier duty. So the Operational Training Command was organized, with twenty-five air stations, mostly in Florida, devoted to its program of training in service type aircraft and fleet practices.* After two months there, the naval aviator was assigned to a type squadron—Fighter, Bomber, Torpedo, Observation, Photography—and one of the Fleet Air Commands took over, the six month's task of welding the still raw trainees into a perfect fighting group ready to take its part in the war aboard a carrier or at an advanced base.

All along the line, it was training, training, and more training. Even when the squadron went aboard its carrier, its "shake down" cruise was devoted not only to getting acquainted with the new ship, but to last minute training. And during the long voyage across to the war zone, more training was carried on. New gear was

*During the first years of the war expansion, the programs of these successive commands were coordinated by the Aviation Training Division. Later that coordinating responsibility was given to the Chief of Naval Air Training, with headquarters located at Pensacola, Florida.

constantly being developed, and new tactics being worked out, with which naval aviators must be acquainted.

All along the line, motion pictures and slide films played their part in clarifying training problems, standardizing instruction, broadening the base of imparted knowledge, speeding up learning, and increasing retention of things learned.

The facts on their production and distribution to aeronautical activities are significant. From March 1941 to March 1945, production of twenty-three hundred and forty (2340) titles was initiated by the Training Division for one or another phase of the naval aviation training program. Of those begun, two thousand and fifty (2,050) have been completed, and distributed. The balance is made up of projects still in production (235), or of films cancelled during production (56) due to changes in policy or equipment, or shifts in training programs due to the progress of the war.

But these figures do not complete the story. During the same period of time the Army Air Forces were producing hundreds of motion pictures and slide films, many of them on equipment used by the Navy or covering operational and training problems similar to the Navy's problems. All were reviewed by Aviation Training Division's Film Distribution and Review Unit with the representatives of the training or technical desks concerned. Whenever an Army film was found applicable to naval aviation, duplicating material was procured from the Army under a reciprocal agreement, and prints made for Navy distribution. Hundreds of Army titles have thus been selected and used in the aviation training program.

The same scrutiny is made of films produced for other Bureaus of the Navy. The Bureau of Ordnance initiates requests for films on aviation ordnance; the Commander in Chief's office requests films on amphibious operations of interest to those furnishing air coverage; the Bureau of Ships asks for films on Electronics of interest to aviators; the Bureau of Medicine and Surgery requests films of significance for personnel of naval aviation. All are reviewed and distributed to aviation activities in accordance with the recommendation of technical and training officers.

Similarly, films produced by other government agencies such as the Office of Education, the National Defense Research Council, by the British and Canadian armed forces, and by aircraft and aircraft instrument corporations are reviewed, and when found usable, are sent out to naval aviation activities under Navy number and title.

In certain training fields, notably Aircraft Recognition, this reciprocal use of the films of each of the services by the others, has brought about a planned division of production, so that each produces for all concerned its quota of recognition motion pictures on foreign and domestic airplanes.

A "seeing-eye service" graphic for a Navy air training film shows the pilot's eye-view of the skidding path of his bomber if he makes a proper dive over a target.

In addition to the definitely technical operational or tactical training films so far discussed, Aviation Training has used in its program a number of "general interest" films:—the Army-Navy Screen Magazine which brings together footage of developments around the world, valuable in training, and having definite entertainment and morale value; the Army Air Forces Weekly Digest, briefly edited excerpts of Air Force activity around the world; photographic documentary films like "Fighting Lady."

During the four year period under consideration, there has been distributed to naval aeronautical activities, the staggering total of 428,000 prints of Navy training motion pictures and slide films, and Army, Marine, British, and commercial films considered of value to Naval Aviation.

Two illustrations, one chosen from technical training and one from pilot training, will show the type of planning and curricular use of films which demanded the production and distribution detailed above. The first is taken from an early description (September 1941)* of the audio-visual program of the Aviation Service Schools, the second from records on Operational Training.

The Aviation Service Schools Audio-Visual Aids Program

These schools were of four types designed to instruct four groups of sailors in aircraft maintenance—the aviation machinists mates or airplane mechanics, the aviation metalsmiths, the aviation radiomen, and the aviation ordnancemen. Over a hundred thousand men were in these schools, which made them, with the possible exception of similar Army projects, the largest vocational schools in the world.

The basic work of the curriculum was outlined in "job sheets"—detailed instructions accompanied by blueprints. These job sheets, given to the students, formed their study texts. But in addition, each job sheet was put into a sound slide film which pictured for classroom use, the words printed on the job sheet. The students read what was printed, they saw the operation in pictures, and they heard the commentator drive home the essential facts set forth on the job sheets and in the slide film pictures.

This three-fold approach gave optimum learning conditions to the students. In addition, it met successfully an important problem for the Navy, namely, the problem of standardizing teaching procedures. The demand for teachers was tremendous as these schools were set up. Many of the men called to instruction were expert mechanics, but had little or no practice in teaching. The audio-visual teaching aids given them were invaluable in guaranteeing a body of information that would be imparted to all students alike in a form that had been carefully planned to get sound pedagogical results. They provided a norm below which no instructor could fall, and yet were flexible enough so that when the new teacher mastered his job, the films need not handicap him. For instance—and this happened frequently—when

*Taken from an address given by Lt. Comdr. Thomas Orchard, USNR, to the Motion Picture Council of the District of Columbia, YWCA, November 3, 1941.

the instructor had mastered his subject, he could discard the records provided and use only the slide film pictures, giving the commentary needed for his students himself, timing his presentation to his students' needs.

But though the slide film was the foundation of the course, it was recognized that it was too limited a medium to meet all the teaching needs of the schools. For example, in teaching manipulative skills,—the bending and forming of metals, or the use of the lathe—motion is essential. Hence, where the service schools' curricula taught motor skills, training motion pictures were provided. And, for another example, where broad interpretation of the total job of training is needed, an interpretation that will arouse interest and raise the student's level of aspiration, the motion picture is a master-medium.

An example of this last type provided for these early schools is a picture on "The Plane Captain"—a sailor who is in charge of the maintenance work on a single airplane. This was the job which the best students in the schools would be selected to do when they had completed their three months' course of instruction and had had line maintenance experience. The film was shown at the beginning of the course so that the student might get a birdseye view of himself as he would be three months later, so that he could see at the start what he needed to learn as he went to school. One early account of this film states:

"Such a film is, of course, vitally interesting to a youngster embarking on a new career. . . . Even to the layman, such a picture is interesting for it shows how devoted the plane captain is to his responsibility, his airplane. The young sailor treats the plane as gently as a mother treats her child. He checks over the shining machine with the familiarity of long and intimate experience, prodding the motor here and tightening a screw there, running his hands over the smooth wing surfaces as if he were caressing them, to discover tiny tears in the fabric.

"This, of course, was only one of several similar interest-provoking movies. Others tell him in general terms about the types of naval aircraft, their missions and purposes, and help to bring home to him the realization that he, a mechanic, is an important member of the triumvirate—the designer, the pilot, and the mechanic—which enables a fighting machine to do its job."

Films in Operational Training

The second example of wide film coverage of a training curriculum in Naval Aviation is chosen from the field of pilot training. On April 30, 1942, when the program of the Operational Training Command was well launched, the Chief of that Command requested the production of something like a hundred motion pictures and slide films for his program. On the basis of a survey of the training films produced up to that time, he stated his belief that they covered "the more elementary subjects more suitable for use in initial and elementary training than in the more advanced stages of the training of naval aviators"; enunciated his belief that "educational motion pictures can form a very valuable part of the training in the Air Operational Training Command"; and asked for pictures to familiarize students "in the many complexities of carrier operations, not only in landing and take-off technique, but in all phases of carrier deck procedures"; and on "Patrol plane handling on the water, sea plane recovery methods, etc."

In response to this letter, representatives of the Chief of the Bureau of Aeronautics who were responsible for film production for the Navy, and of five commercial motion picture production companies under contract to the Navy went to Jacksonville to decide with staff training officers of the Command what pictures should be produced, the order of priority in production, the specific content of each film, and the way it would be used in the program.

Out of such planning developed the production outlines, scripts, and photography for nearly one hundred (100) motion pictures and slide films on practically all aspects of the ground and flight training syllabus of the Command's program,—indoctrination of students to NAOTC: familiarization with type planes; navigation; aerology; communications; gunnery; type squadron operations; recognition; and intelligence and survival.

A summary issued in early 1943 under the caption "Suggested NAOpTra Motion Pictures and Slide Film Syllabus" reads as follows:

"This suggested syllabus shows 61 motion pictures and approximately 27 slide films for NAOT Syllabus showings. An additional 48 motion pictures are recommended for Optional showings, since they repeat NAIT syllabus, for refresher courses, inclement weather and semi-entertainment use.

"Roughly this should represent about 5 hours of training film time per week of which 2½ hours would be included in NAOT syllabus. Actually, the time for minimum showing would be less in that all squadrons are not concerned with all films (VF, PP, etc.). However, when it is considered that some pictures should be screened several times each, the time requirements would be approximately as outlined."

The specific curriculum allocation of individual films to the NAOTC syllabus has, of course, undergone many changes since that time. New films have been produced. Training phases have been shifted between the flight training commands. The specific assignment of films at this advanced level has become the responsibility of the Instructors school at Jacksonville. The reliance of the command on this kind of teaching aid continues: films play an important part in the final development of fighting naval aviators.

Current Status of Films in Naval Aviation

Currently, the programs of film production for basic technical and flight training have been largely completed. The center of attention has definitely shifted to fleet training needs and to revisions of older films now outmoded because of new type aircraft, new tactics and operational methods developed during the progress of the war, new equipment and ordnance developed to make more effective the actual combat program of Naval Aviation.

Two specific developments deserve comment. In June 1942, three motion pictures were produced covering the Primary Flight Training syllabus. They covered basic flight theory, basic flight patterns, maneuvers and formations. Eighteen months later, on the basis of lessons learned in over a million flight instruction hours, the Primary Flight Training Command requested a thorough-going revision of the old films. A new series is being produced, this time including twenty-five motion pictures, covering in detail all phases of the primary flight training curriculum. In the opinion of those developing the series, a fundamental contribution to all flight training—military and civilian—is being made by these pictures which will be valuable as long as the structural design and control of airplanes remains basically what it is today. The second de- [*Turn to page 92*]

THE CONTRIBUTION OF *Color* TO NAVY TRAINING FILMS

by Walter Evans, Lt., USNR

DURING the past five years the use of color film has shown a consistent increase throughout the Navy. Subjects filmed in color include current naval operations, training films, gun camera records, combat reports and historical records. To give an idea of the scope of color training films, more than one thousand 16mm prints of certain subjects have been distributed.

For reasons of portability, flexibility and film economy, 16mm cameras and film are used to make color motion pictures of combat action. From the originals, four different negatives may be made depending upon various Navy requirements; "dupe" 16mm color prints, black and white 16mm prints, 35mm color "blow ups" or 35mm black and white. These films may then be distributed for theatre release, training films, stock footage or other purposes.

16mm and 35mm original color photography are used in the production of Navy training films; 16mm film is used for most of the live action subjects and 35mm film is used for the majority of the animation subjects. However, practically all Navy prints are distributed on 16mm film.

Color Increases Learning

Accuracy is an important consideration in the production of training films. Every word in a script is carefully checked to be certain that no inaccurate statement is made; likewise, photographically, it is advantageous to show a subject precisely "as it is" including its true color.

Although the instructional values of color may vary with different subjects, color adds to the identification of subject matter; some objects in fact can only be recognized or differentiated by their characteristic color. In a film entitled *Flag Hoist Signals—Simple Formations* colored signal flags and pennants were shown alternately with scenes of ships executing the tactical maneuvers indicated; without color much of the teaching value of this film would have been lost.

In the training film made to help castaways identify edible fruits and vegetables found in the South Pacific area, color aided tremendously in making possible easier recognition of the Papaya, the Pandanus and other species. The size and shape could be shown in black and white, but ripeness is only recognized by color. It is interesting to note that with black and white film, a narrator can refer to an object as being red, and although we see it on the screen as black, there is no objection. But in a color film subject, the slightest variation in the color rendition is criticized. This insistence upon precise color rendition has posed many problems where large quantities of prints are demanded in a hurry.

In medical films, differentiation in the color of the subject may be of tremendous importance. In the recently completed film on *The Administration of Blood Plasma* it was essential to show three changes in color during processing; whole blood, liquid plasma and dried plasma.

A clinical color film on *Typhus* was made during the fight against an epidemic in Naples. Detailed close-ups showed the skin rash, the characteristic color of the eyes and the peculiar color of the tongue. In a black and white film, these important identifying factors would have been impossible to portray.

★ ★ ★

The color scenes above show graphically the advantages of color in a Navy scene on survival: here the use of chemicals to color sea water for identification from the air is shown

Audience Interest Heightened

Some subjects are "naturals" for color production. One such film titled *Setting 'Em Down at Night* was made to teach flyers the standard color sequence of night landing lights used on airfields. Red lights indicate approach and take-off zones; green lights are for the ends of the runway; clear lights for the edges of the runway and yellow lights show the caution zone. The film not only presented the picture with all of the colors as they appear to the flyer at various altitudes but also maintained the proper orientation by use of black backgrounds to simulate night effects. In this case even the black and white objects on the screen were shown in their authentic, true colors.

The average person enjoys seeing color used imaginatively whether it is for entertainment or instruction. Color increases audience interest and participation; it is much closer to reality, more life-like. Color often brightens an otherwise dull or monotonous training film.

Now that color animation is readily available to training films the limitations of black and white no longer need restrict the creative graphic artist whose problem is to attract and keep the attention of students at a continuous level during the film lesson.

In the film *The Enemy Bacteria,* color combined with fantasy is effectively used to teach hospital corpsmen the danger of infection. At times, the psychological effect of the color employed is intentionally revolting. The bacteria are first shown under a miscroscope; then a dissolve brings different species to life as venomous characters intent on the destruction of the healthy body by multiplying and spreading infection. The viewing of this film is an unforgettable experience for the Navy hospital corpsmen charged with the responsibility for guarding against breaking the chain of asepsis.

The illusion of depth is another very interesting and technically valuable attribute of color photography. A film was recently made to demonstrate a new method of sand blasting and of painting ships' bottoms. In addition to the color which was essential to the subject for identification purposes, surprising stereoscopic effects were obtained.

Color has been found to be one of the most effective devices to increase interest in slide film subjects—"illustrated lectures"—which lack the attention-getting factors of motion pictures. The Navy has taken advantage of the curiosity of instructors and trainees who will view almost any slide film if it is in color, but will avoid all but the most essential black and white slide films.

Color Clarifies Instruction

Color enhances the clarity with which a subject can be visualized. A long shot of a Navy Yard may appear as a confused jumble until the addition of color permits immediate identification of ships, dry docks, and other objects. The brilliant color of flags draped across a ship's stern indicate that it is ready for launching. Various kinds of ammunition are identified by their color.

Color has been used to simplify the visualization of subjects which would be more complex if presented in black and white. In one such film the problem was to show in animation three elements of power in a mechanism. A clear presentation was made by giving different colors to represent the fuel, air and water. If the producer had been limited to black and white film, it would have required a series of complicated if not confusing symbols to identify the different elements.

An artist may use color in a picture to emphasize important factors. This technique was employed in a series of slide films designed to teach geography of the various theatres of war in the Pacific. The only photographs available had been gathered from many different sources such as the *National Geographic Magazine.* The original black and white photographs were reproduced with a color drawing superimposed to detail the pertinent information in each frame. One frame for example showed an enlarged drawing in color of a bird, another of a poisonous snake with its characteristic markings.

A training film entitled *Flight Deck Crews* was produced to help train men for duty aboard carriers. The various officers and crew men on carriers are identified by the color of their work uniforms and helmets. Plane directors wear yellow, gasoline fueling crewmen wear red, fire rescue men wear white asbestos suits, the barrier and arresting gear men wear green and the plane handling crew wear blue. Instantaneous and continuous recognition of these crew men and their job was accomplished by means of color.

Marine Corps action at Tarawa is filmed in natural color which provides many added advantages for study of location problems, terrain, and camouflage in Navy and Marine Corps training films.

In one film made for aviators color animation shows how the human circulatory system fails when flyers pull out of steep dives causing "blackout." In another film made to instruct deep sea divers, the reaction of the human system to atmospheric pressures at different depths is shown clearly by means of intercutting live action and color animation.

An aerial reconnaissance picture in color may disclose important differences in terrain or expose enemy camouflaged installations which might show only as indistinguishable grays in a black and white picture.

The highest priority and largest volume of color film is allocated to the fleet, Coast Guard, and the Marine Corps to photograph combat action.

The Bureau of Medicine and Surgery leads other bureaus in the number of color training films in production. The films which have achieved the widest distribution of all color Navy training films are in a series on *The Fundamentals of First Aid.* Currently, films are being made on a variety of subjects with location photography extending from the National Naval Medical Center at Bethesda, Md., to the latest combat area. Subjects include *Duties of Navy Nurses in Air Evacuation, Routine X-Ray Procedure, Plague Control, Amputations, Head Injuries* and a series on *Plastic Surgery.* Another series of films titled *"Medicine in Action"* is in continuous production to orient doctors, nurses and hospital corpsmen in field procedures. After serving the immediate purposes of training, such films as *The Evacuation of Wounded at Saipan* will provide valuable historical documents of the service of medicine to the Navy during this war.

The Bureau of Ordnance has found color particularly helpful for slide films dealing with instruction in the operation of complex gun mechanisms; the wiring diagrams were read and understood more quickly by the students when the various circuits were shown in different easily distinguished colors.

The Bureau of Personnel used color motion pictures for added interest in a series titled *Navy Ratings* to indoctrinate inductees in the duties of machinists, gunners and other ratings. These films replaced lengthy lectures and saved many hours of time for the Selection Officers who guide the young sailors in the proper choice of Navy training best suited to their individual aptitudes. Another interesting series dealing with seaman- [*Turn to page 113*]

Aerial reconnaissance and training functions are greatly enhanced with use of aero color film.

Medical Films at War

by Gordon L. Hough, Lt., USNR

(Left, top to bottom) **Studio production scenes during the filming at a commercial studio of a recent Navy series on medical care.**

"TO KEEP as many men at as many guns as many days as possible" is the succinctly stated aim of the Navy's Bureau of Medicine & Surgery, commonly called "BuMed." Its responsibilities have increased commensurately with the growth in size of the Navy from 1941 to the present time. As in other bureaus of the Navy, this overnight expansion of program and personnel confronted BuMed with a gigantic training problem, but one with a unique feature: concurrently with training its own medical personnel in the performance of their new duties, BuMed was charged with the obligation of making all men and women in the Navy health-conscious. Here was the first opportunity in which an intelligent use of visual aids could prove of immense value.

The immediate training need was to develop in all naval personnel an understanding and appreciation of the fundamentals of health and hygiene. Ignorance of these basic facts would make the task of BuMed immeasurably harder. A widespread awareness of these essentials was the foundation on which BuMed's program depended. Every man at every gun had to cooperate with BuMed if he was to remain at that gun the maximum number of days.

In this period, such elementary subjects as personal hygiene and first aid were presented in film to the Navy ashore and afloat. Dramatic treatment was frequently utilized to attract and retain the attention of an audience which often resented a straightforward, simple approach to an obvious truth. In many of these cases a "selling job" had to be done, one of the most important promotion campaigns in Navy history. These films were carefully integrated with the basic training and indoctrination courses taken by all men and women in the Navy. Conceived by medical officers, the motion pictures and slide films were supervised by the Bureau of Aeronautics.

With an awareness of basic health and hygiene planted in the minds of all naval personnel, BuMed could then turn to the vitally important instruction of its fast-growing ranks of hospital corpsmen. The motion picture series *Care of the Sick and Injured by Hospital Corpsmen* treated such basic subjects as morning and evening care; bed baths; taking temperature, blood pressure and pulse; applying and removing surgical dressings. Although demonstrating these techniques in ideal situations, the films emphasized the need for adapting the fundamental principles to advanced base and combat conditions. The few corpsmen who had had any medical experience in civilian life had never encountered so large a job under such difficult circumstances.

* * *

In testimony to the effectiveness of these films, the time needed for training hospital corpsmen was greatly reduced. This basic training could be carried on by motion pictures before large groups thereby lessening the need for individual instruction and small classes.

Begun soon after the corpsmen films were several series designed to demonstrate to the new medical officer recommended practices in the field of medicine, surgery and dentistry. In orthopedic surgery the series on *Skeletal Fixation by the Stader Splint* describes the use and advantages of this appliance.

Amputations, color series, presents approved operations in the field under emergency conditions and at the Navy's amputation centers where the patient is later fitted with and trained in the use of prostheses.

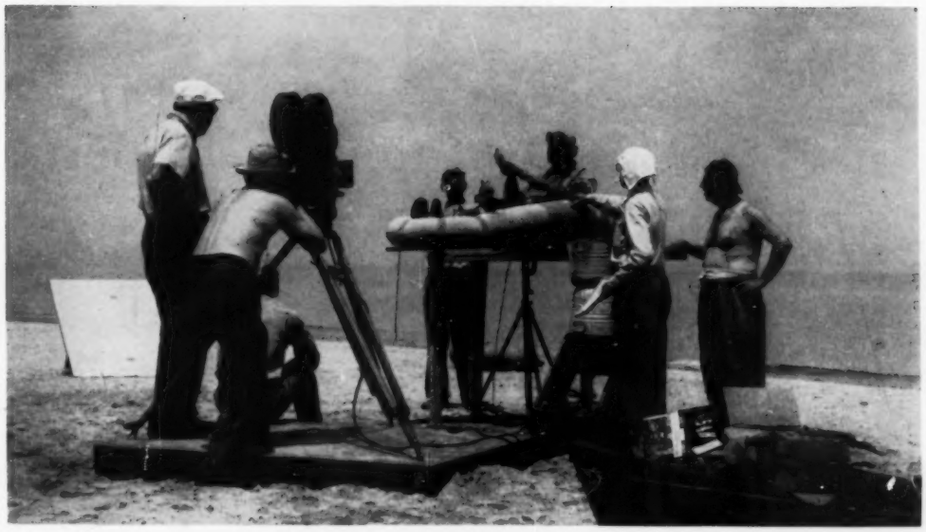
New surgical techniques are described in the series *Eye Surgery.* In one film an effective method of removing foreign particles from the eye by an electro-magnet is presented. Flying metal splinters imbedded in the eye posed an immediate problem to all military surgeons. Various types of eye operations are covered in other films of this series. When experimentation had resolved a problem, it was of vital importance to disseminate the information as speedily as possible. Color films have performed a most valuable service in this regard.

A similar instance may be found in the field of dentistry where *Acrylic Bridgework* describes in detail a new technique developed by Navy dentists. Four reels of color film are devoted to a complete visual report of the entire operation.

In the new field of aviation medicine, flight surgeons of BuMed have carried on research in collaboration with aviation personnel. The film *G and You* vividly portrays the effect of gravity on a pilot during the pull-out after a steep dive causing him to "black out." *Fly High and Live* presents forceful arguments on the need for the proper use of oxygen equipment.

The wide scope of the medical officer's duties require considerable knowledge of sanitation measures to be taken under different field conditions. Preventive medicine and methods of controlling the spread of communicable diseases have been graphically treated in several series of training films. Motion pictures have played an important part in the effective control of malaria. Animation has proven particularly suitable to portray the menace of tropical diseases. This technique has been used successfully in the humorous series, *Ten Commandments for Health.* "Mac," BuMed's equivalent of naval aviation's "Dilbert" and the Army's "Private Snafu," demonstrates the proper "do's" and "don'ts" to insure a healthy life under advanced base conditions. [*Turn to page 104*]

What is a PROJECT SUPERVISOR?



by Robert T. Furman, Jr., Lt., USNR

IT WAS growing dark twenty miles off the Florida Coast. The sun, already below the horizon, still threw bright shafts of light on frothy, high-flying clouds. Below, on the surface of the choppy sea, a one-man life raft bobbed crazily up and down. A mile or more away one of the Navy's sleek Aircraft Rescue Patrol boats was standing by. And overhead, a two-seater plane grew larger as it approached rapidly from the north. As it passed, a red Very's star shot up from the raft, curved gracefully far below the plane and died as it fell back to the water's surface.

This was the setting which the Project Supervisor hoped would produce scene 197 of Navy Training Film MN-1305, *Naval Pyrotechnics*. The script called for "long shot (night) from 1000 foot altitude of red Very's star fired from life raft." It did produce what he wanted eventually, but not that night.

The unexpected happened, as it does more often than not when a camera crew is working in the field. Two minutes after that first trial run an Army patrol plane appeared, a B-24. The pilot must have seen the Very's star and decided, logically enough, that he'd found a situation which called for investigation. He went into a steep dive and buzzed the raft. He could see that there was a man in it, barely visible in this light as the tiny rubber boat see-sawed with the waves. The man in the raft was the Project Supervisor, who by this time was sea sick as a cat and in no mood to be hospitable to a B-24, particularly when there remained just ten minutes more of the proper light in which to shoot scene 197.

The B-24 pilot wheeled around for another look. This time he came in flat at about a hundred feet. The Project Supervisor waved him away weakly but, of course, all the pilot saw was a pigmy waving an arm which might have meant almost anything. He came around for a third look. The men in the ARP boat and the camera plane were helpless. They couldn't call the B-24 because, unless predetermined, radios are seldom on the same frequency. The Army boys made two more runs, each time coming so close to the raft that their slip-stream flattened the water around it. Then they must have decided that the ARP boat could handle the situation, whatever it was, and went off to the south. By this time it was much too dark to shoot. The whole thing would have to be attempted another night. The ARP crew pulled the Project Supervisor aboard, green and shivering, and started for home two hours away. The camera plane banked and headed back to the base. Not a single frame of film had been shot.

There's nothing unusual about that incident. But it's an example of the kind of unpredictable interference with carefully laid plans which makes the work of a Project Supervisor at the same time interesting and exasperating. The next night the crew tried again to shoot the same scene and again came home empty handed. The "intercom" system went dead after the camera plane left the field and the camera man couldn't give directions. The third night they came home with the scene.

It took the better part of a day to put together the various elements which were required for scene 197. A description of what was involved will provide a good thumb nail sketch of that part of the Project Supervisor's duties in the field which the Navy describes in the simple phrase, "secure Navy equipment and personnel required for the production." Here's a list compiled from the Project Supervisor's scheduling notes.

THE PLANE: Have a man assigned for after hours duty. (Officer-in-Charge will say, "You can have either Jack, or Joe or Dave." See all three and try to work it out so that the one who will be least inconvenienced does the job. Be sure to get a competent camera plane pilot. That last man may have been a good pilot but he couldn't "fly camera").

THE PLANE'S RADIO: Must be put on the same frequency as the ARP boat. Find out what the ARP frequency is and see the radio chief about changing over the plane's radio at 1800. Don't do it ahead of time or whoever uses the plane won't be able to communicate with his group.

THE BOAT: Arrange for the ARP boat and crew from small boat base on the coast. (Remember, it's a special duty and nobody will want to go. Hard for them to spare a boat anyhow.)

THE VERY'S PISTOL: Pistol and red shells from ordnance. Must be personally responsible.

ARRANGE THROUGH ARMY AND COAST GUARD to notify all ships and planes in the area that Very's shells will be fired 15 miles off-shore for photographic purposes. (Editor's note. This is done so that patrol boats and planes will not think that they have run into a genuine case of distress. The B-24 was based too far south to receive the information.)

The list continues. It goes on to include such items as: secure helmet, goggles and 'chute for camera man; check aerology on weather—is it likely to louse up or stay clear?; arrange for transportation for camera man to field and remainder of crew to small boat base 30 miles away; go over details of shot with camera man and pilot so that there's no doubt about where the plane must be in relation to the rubber boat for proper lighting of the shot; secure rubber boat and pump to inflate it—check to be sure it's in good order; arrange transportation for pilot from "O" Club to hangar.

Well, that's probably enough. More would make this particular scene seem unusually complicated which it was not. Any one of 50 scenes in the same picture required comparable preparation, and so have hundreds in other productions. If it's not planes it may be ships, small boats, special equipment or personnel. The Project Supervisor rounds up whatever is needed, then stands-by to check the actual shooting.

In addition to being the leg man for equipment and personnel, the Project Supervisor is in effect the Navy's producer who works with the civilian producer. There is a Navy Project Supervisor, and also a Technical Advisor, on every production. It's the Technical Advisor's responsibility to insure that the production is correct technically. It's up to the Project Supervisor to see that the final product is a good motion picture, properly designed to do an effective job of teaching, indoctrination, morale building, or whatever its purpose may be.

In the ideal situation, there is a Project Supervisor for every film or series of films. Actually, however, the Training Film and Motion Picture Branch does not have enough men to go around. A Project Supervisor may supervise two or three or as many as a score or more productions concurrently. As a result, he is likely to be on the go constantly, dividing his time between the producers [*Turn to page 102*]

Films in Fire Control

by Eric P. Strutt, Lt. (jg), USNR

ACROSS the Anacostia River in Washington, D. C., lies the Naval Receiving Station, a broad acreage covered with dozens of buildings that serve as living facilities, work shops and lecture rooms for thousands of men training for proficiency in specialized naval jobs. Here are located the Ordnance and Gunnery Schools, encompassing: Gunnery Officers' Ordnance School, Fire Control (Advanced), Gunner's Mates and Electric Hydraulic, Optical (Primary), Instructor Training (Gunner's Mates), Instructor Training (Fire Controlmen). Because of the specialized technical instruction presented by these schools the Training Film and Motion Picture Branch has set up a complete supervisory unit to plan and produce training films for these activities. This group accounts for approximately 15% of all Navy training films.

This is a big job, a job that evolved out of the urgent need in the early days of 1942—after the sneak attack on Pearl Harbor that brought home to the United States the vital necessity for expanding the Navy to a size and strength surpassing the most elaborate conceptions of previous years.

Men and ships do not in themselves make an efficient and hard hitting Navy. Before that condition exists the men must be made so familiar with their machines and weapons that the operation and maintenance of those machines and weapons become almost second nature. While the Ordnance and Gunnery Schools are only part of the over-all pattern of naval preparation, the importance of the field they cover cannot be minimized.

Almost everyone knows what a gunner's mate is, but it might be well for us at this point to clarify the meaning of "fire control." Fire control systems are designed to control and direct the fire from the ship's guns in order to assure greatest accuracy and efficiency. This firepower is the basic consideration of any fighting vessel. The ship exists primarily for the purpose of transporting weapons and their trained personnel (fire controlmen and gunner's mates) within range of the enemy, where they can bring into telling action the Navy's modern offensive weapons.

The officer who was placed in charge of the Ordnance and Gunnery Schools in those early days of 1942 approached his new command with the memory of Dec. 7, 1941, sharp and clear in his mind. He remembered vividly standing on the deck of his flaming ship, urging his men to fight off the Japanese attackers with all available weapons; therefore he was exceptionally aware of the need for a vast pool of trained personnel, and the necessity for haste in speeding and expanding their knowledge.

When he took command of the Fire Control and Gunner's Mates Schools he found approximately 100 students working with inadequate facilities and insufficient instructors, at a pace inconsistent with the urgency of the times.

The officer, with the able and thorough cooperation of several assistants, was confronted with the task of expanding the school and its facilities to provide trained men for the great number of new ships that were being commissioned. He realized that it would take months to supplement their training program. An investigation of other naval activities brought him to the conclusion that the proper use of films could help to solve the problem with which he was faced.

A comprehensive survey indicated that there were approximately 1,000 subject items offering possibilities for film utilization. Obviously, this was too much to take in one bite, so the subjects were broken down into *Urgent, Badly Needed,* and *Desired.*

With the entire program in a state of trial and error development it was decided that a greater degree of control could be exercised by using a few commercial producers rather than many. This also concentrated the process of indoctrination on fewer organizations. On the basis of recommendations from the Training Film and Motion Picture Branch, a contract was awarded to the first producer and work was

started on the first group of films in August, 1942.

To establish a clear cut format and style of presentation, a series of conferences was held with representatives of the producer, the Fire Control School and the Training Film and Motion Picture Branch. It was considered desirable to start with relatively simple material and to use sound slide films as the medium of presentation. Writers, technical assistants, educational specialists, production specialists and the producer all worked together to achieve quality visual aids in the minimum of time. Each individual represented a different viewpoint, and each contributed his particular talents to the final production.

The courses being taught in the classrooms were the basis on which the films were inspired and developed. The curriculum director of the school brought with him a copy of the planned course of study! The instructor assigned to each series as technical adviser brought his knowledge of classroom procedures and problems. The writers, artists and the Training Film and Motion Picture Branch representatives brought their ideas relative to film presentation of the subject.

Hours of discussion followed to clarify the specific operations and principles to be pictured, after which the artists and writers went to work to write the scripts and organize the accompanying story boards. First drafts of these were submitted to the same group that had begun the discussions for consideration, changes and approval. Every script received the same scrutiny in each of its various stages —production outline, action outline, master script, test animation and acceptance screening. This phase-checking has resulted in films of an extremely high degree of technical accuracy and excellence of organization.

This quick review tends to convey the impression that from the beginning everything has gone smoothly, and that after the initial problem of organization had been solved there were no more headache inducers. This, of course, is far from the truth. There have been numerous decisions necessary on a great variety of questions, and many of these questions still arise with every proposed series, and with every individual film in that series.

Master control chart provides information on progress of projects through all stages of writing and production.

To detail all these problems here would take much space and serve little purpose, but a few may be indicated by way of examples. Naturally, the exact aim of every film and every series must be carefully determined in its relation to the classroom job it must do. It must cover the subject completely, without spreading into by-paths and digressions. Again, in the development of the script there may be valid differences of opinion among technical advisers, based on dissimilarity of service backgrounds. One officer may be criticizing on the basis of his experiences in the North Atlantic, while another may draw his observances from duty in the South Pacific; and because of different operational conditions there has been a variation in procedures. It has been up to the Training Film and Motion Picture Branch personnel, working with the Technical Adviser, to determine the final presentation (and to accept the responsibility for the decision).

The use of the film medium itself is always good for many hours of consideration. One subject lends itself to the use of straight photography; the next one might require all animation; another might best be shown with line drawings; while still another might use a combination of any of these techniques.

Occasionally, a subject has been suggested which could be shown by simple block diagrams. Sometimes a request has specified that the subject be treated by animation when, to save time and expense, it should be treated by straight photography or the use of models.

Often in the delineation of certain complicated aspects of the fire control mechanisms the use of color is necessary. The problem here, naturally, does not end with the decision to use color, but must include the choice of suitable colors against effective backgrounds, the proper separation of these colors on the screen, and the extensive and continuous testing of various types of color to present most effectively the intricate detail desired. However, there is no doubt that even up to the present writing the employment of color has not been fully utilized, mainly because of limitations on time and personnel.

The films produced for the Ordnance and Gunnery Schools are of necessity extremely technical, because all the students in the schools at the present time are carefully chosen men—enlisted personnel all hand-picked from the fleet for advanced training in gunnery and fire control subjects. There is no "boot" training or indoctrination undertaken. To a large extent these men have a working knowledge of the elementary principles involved in their jobs. It naturally follows that the work of designing and developing the films that will help them to learn advanced procedures is not easy.

Offsetting these difficulties, is a trained cooperative goup of naval and civilian workers, fully aware of hazards to be avoided and successful methods of attack to be used, based on knowledge gained in dealing with the specific problems of gunnery and fire control in the past three-plus years.

Today the original student group of 100 men has become several thousand; the few buildings have been increased many times; teaching facilities have become much more complete. The officer who was originally in charge of the station is now commanding a ship at sea, but the work he began goes steadily forward under the capable direction of his successor and the assistants who helped to de- [*Turn to page 108*]

Staff officers and instructors of the Advanced Fire Control School are active in all stages of production. Here curriculum is planned around slide films produced at the school.

First showing of slide films is attended by Officer-in-Charge, Ordnance and Gunnery Schools, his assistants, and Training Film Branch representative, while the producer's representative reads the script.

(FIGURE 4)

KEEPING TAB on Navy Training Film Production

by Jack H. McClelland, Lt., USNR

THE PRODUCTION of audio-visual training aids by the United States Navy had its inception quite a few months before the attack on Pearl Harbor, but it is still a fairly new field for specialization in the Naval Establishment. Yet, this newness has been no deterrent to that lusty growth inherent in so many activities essential to the prosecution of the war. There was in the Navy an early realization of the potentialities of motion pictures and slide films for increasing the effectiveness of teaching and for reducing the time necessary for mastery of subject matter. This eager acceptance of films for training is emphasized by the realization that one year after the basic directive was issued by the Secretary of the Navy authorizing the Bureau of Aeronautics to produce training films for the entire Navy, the Training Film and Motion Picture Branch had over 1,800 motion pictures and slide films simultaneously in production.

How to maintain close supervision over the production of all of these films immediately became a subject of vital concern. For example, military necessity demanded the earliest possible completion of films requested for combat training. Alert supervision, therefore, had to be exercised in order that potential delay of these films might be anticipated and prevented. If production facilities became jammed, it was sometimes necessary to give high priority films the green light at the risk of causing some delay to other, non-operational type films. Before any juggling of production schedules could be accomplished, however, dependable and easily visualized information on the exact status and background of each film in production had to be made readily available and up-to-date at all times. Then, too, with hundreds of films in production at commercial studios all over the country, it would have been alarmingly easy for a few to fall by the wayside. That, obviously, could not be permitted. Finally, there has always been a definite shortage of trained supervisory personnel necessitating close observation of the work load of each available supervisor and frequent adjustment of project assignments in order that talents and time may be completely utilized. With these preliminary evidences of the need for adequate methods of production control, officers of the Training Film and Motion Picture Branch began to explore various possible solutions.

Several manual approaches to the problem of maintaining production records were tried and found wanting in one or more respects. Finally, it was decided that the punch card method used in many machine bookkeeping processes for handling large volumes of minute detail might be used to advantage in this situation. With that in view, research was instituted to determine what features the ideal system must have in order to satisfy all current and possible future needs. The requirements thus formulated were as follows:

[1] A way of recording current production activity or status of each project as well as its recent production history is essential.

[2] Administration personnel should have constantly at their finger-tips complete records on the proposed production schedule for each project.

[3] There should be a convenient way for comparing each film's current production activity with its scheduled activity in order that any tendency to fall behind schedule may be quickly noticed.

[4] Both serial number and title should be given at all times as an aid to positive identification.

[5] There should be some means of identifying the requesting authority for each film. It would be helpful to furnish each requesting authority with a periodic statement of the status of all films being prepared for that authority.

[6] The project supervisor responsible for each film should be easily identified from the records. It would also be helpful to be able to assemble each supervisor's films into a single list frequently in order that his production load and production problems may be analyzed.

[7] The producer selected for each project should be easily identified from the records and provision made for the segregation of all films being made by any given producer in order to permit an analysis of that producer's work load and other problems.

[8] There must be an indication of priority of each film.

[9] As a concise indication of production span, provision should be made for the listing of the date upon which the Training Film and Motion Picture Branch assumed responsibility for the film along with the date when delivery of prints is guaranteed by the producer.

[10] The security classification for each film should be clearly evident at all times with minimum opportunities for error.

[11] Since information concerning the use of color, width of film being used, and length are all intimately related to the problems of scheduling both production and laboratory facilities, these factors should be noted in any set of records to be used for production control.

[12] The causes for any delay that may arise should be readily ascertainable.

[13] Since the project supervisor is the officer responsible for the film and is most closely associated with it, there would be distinct advantages to having him keep the records for his films up to date. If that can be arranged, the supervisor would, of course, prefer records requiring a minimum of detail work for maintenance.

[14] The system finally adopted should be one capable of unlimited expansion to allow for variations in the production load.

[15] All of the above information should be accurately listed in readily available form to permit quick response to each of the many daily requests for specific production information.

Those were the prime requisites of any scheme devised for use by the Training Film and Motion Picture Branch in the exercising of effective control over film production. There remained only the overwhelming task of figuring out how each of these requirements might be satisfied and then welding their various solutions into a simple but trustworthy framework.

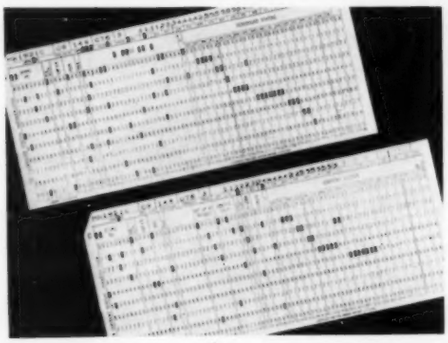
Such a framework was developed. Before

discussing details of its operation, however, it will be necessary to acquire at least a nodding acquaintance with the two fundamentals serving as a basis for the whole system. Those fundamentals are:

1. The components and possibilities of a punch-card machine bookkeeping system.

2. Film production procedures, routines and terminology developed by officers in the Bureau of Aeronautics.

Both fundamentals will be described but briefly, for punch-card machine bookkeeping systems are used in many business installations where large volumes of bookkeeping detail are handled, and Navy production procedures are described more fully in an article by Lt. Comdr. R. B. Lewis elsewhere in this issue.



(FIGURE 1)

Components of an Elementary Machine Bookkeeping System

The punch-card system used by the Navy Training Film and Motion Picture Branch for keeping records mechanically utilizes cards $7\frac{3}{8}$"x$3\frac{1}{4}$" in size on which to record any desired information. The cards are coded as shown in FIGURE 1, by means of holes punched in the cards—the position of the hole or holes in each of the 80 columns determines the character recorded in that column. It is therefore possible to record 80 characters on any one card. The cards shown in FIGURE 1 are a typical pair representing information about one film. It will be noted that the cards have been "interpreted" in this sample. That is, information recorded by means of holes punched in the body of the card has been translated back into printed symbols along the top of each card.

In FIGURE 2, card punch operators are punching data furnished by the Training Film and Motion Picture Branch into the cards. These cards, then, become the permanent record and the information they contain may be reproduced at any time.

(FIGURE 2)

The cards alone would not be particularly helpful if it were necessary to sort them by hand every time it was desired to change their sequence. So, the sorting machine pictured in

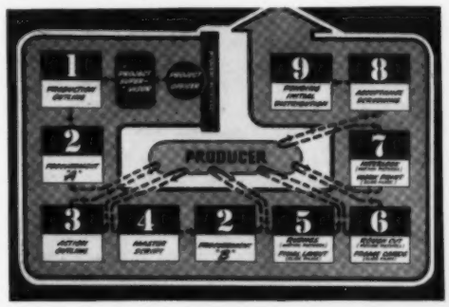
(FIGURE 3)

FIGURE 3 is used. By means of that unit, a deck of cards may be sorted into any desired sequence or grouping. For instance, suppose there is occasion to segregate from an assorted deck all cards having the numeral "7" punched in the fifteenth column. A simple adjustment of a small electrical contact on the machine enables the operator to feed a large stack of cards into the right end of the machine and have all cards with the numeral "7" in the fifteenth column drop into the 7th pocket. By an extension of this idea, such a machine may be used for putting cards into numerical sequence, alphabetical sequence, or any other special grouping.

Finally, there is shown in FIGURE 4 (above, left) the so-called printing tabulator by means of which holes punched in the cards are translated back into printed symbols. It is a highly versatile piece of equipment—so much so that many of its summarizing, calculating and other features are almost uncanny. As far as an understanding of training film production control procedures is concerned, however, it is only necessary to know that it is a machine which scans the holes punched in a card and then prints the symbols so recorded onto any appropriate sheet of paper.

Production Procedures

Officers in the Training Film and Motion Picture Branch have established a production framework equally applicable to both motion

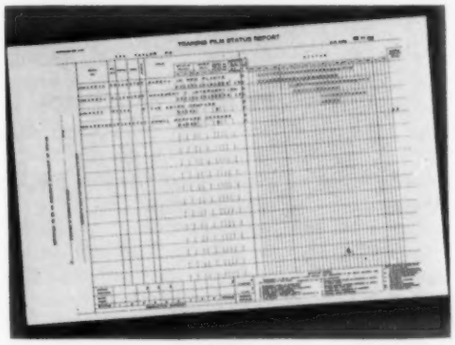


(FIGURE 5)

pictures and slide films. The stages numbered in FIGURE 5 have been standardized to such an extent that there are but few occasions when films do not naturally fall into the pattern. As far as the Training Film and Motion Picture Branch is concerned, the first three stages of production in making a picture may be considered analagous to corresponding stages in the building of a house. The Production Outline, for instance, is the outline of requirements and specifications, or—to pursue the house building analogy—the Production Outline corresponds to the architect's notes regarding what features the house must include. These are established, of course, through conferences with the prospective owner or requesting authority. Similarly, the Action Outline has its counterpart in the architect's perspective sketch while the Master Script corresponds to the architect's final, detailed blueprint. Subsequent stages of production do not deviate particularly from procedures and terminology employed in standard film production practice. It need only be said further, that each stage of production is in fact a definite stage with sharply defined limits. Hence, if it is reported that project MN-2993 is in status "7," we know that the rough cut has been approved and that the interlock screening is the next milepost.

Training Film Status Report

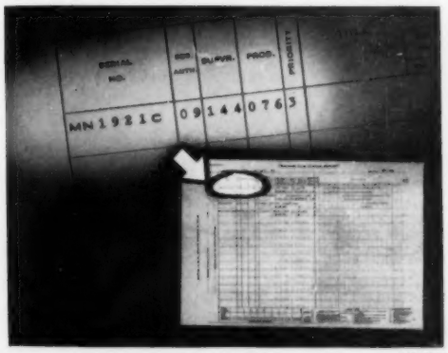
The Training Film Status Report form used for production control in the Navy's film pro-



(FIGURE 6)

gram is shown in FIGURE 6 as it is received by the project supervisor twice each month. This form is filled in by the machine pictured in FIGURE 4 from the cards previously described. It will be noted that each listing required two lines of 80 figures and letters, each extending across the entire width of the page. Since one card has a capacity of just 80 characters, it follows that two cards are required fully to record all information needed on each film.

Going on to the next photograph, it is easy to see what information is recorded. For ex-



(FIGURE 7)

(OVER)

ample, project MN-1921c was requested by requesting authority number "9." The Executive Office of the Secretary of the Navy happens to be number "9" in the list of requesting authorities. Other offices and bureaus empowered to request film production are similarly identified by code numbers.

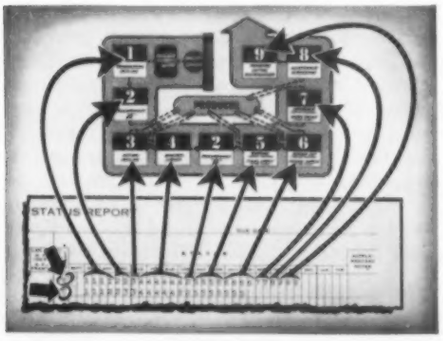
It is further recorded here that the officer assigned number "144," Lieutenant Taylor, is the project supervisor for the film. Producer number 76 was selected to produce this film and the priority assigned is "3."

The first line of the adjacent area of the Training Film Status Report form as shown in FIGURE 8 gives an abbreviated version of the

(FIGURE 8)

title to clinch the identification. The second line shows that the approved letter of request for production was received by the Training Film and Motion Picture Branch on September 12, 1943, and that, according to the producer's contract, approval prints must be delivered to the Navy not later than December 1, 1944. Adjacent columns show that the film is "nonclassified" (code number 1), that it is being shot in 35mm black and white, and that the anticipated completed length is 1,800 feet.

The indication of status, both scheduled and current, is shown in FIGURE 9. For the sake of clarity, each status figure has been identified



(FIGURE 9)

with that stage of production of the production procedure chart which it represents. It is to be noted that the first row of figures shows the production schedule as established near the start of work on the film by the project supervisor, in conference with the producer selected to do the job, while the actual status of the film at any time up to the present report is given by the second row of figures for each listing. If the film is on schedule, the "Scheduled" and "Current" status figures for the given reporting period will be [*Turn to page 96*]

Audio-Visual Aids in Psychiatry

by Howard P. Rome, Lt. Comdr., USNR

THE SCOPE of psychiatric treatment has been amplified greatly by the use of specially designed audio-visual aids. Such films are able to help the psychiatrist in his formulation of the background of emotional and mental health. They can illustrate, by well-chosen examples, the many points which he has to get across to his patients. A psychiatrist's tools are his words. With them he tries to clarify certain confusions, to elaborate hidden, overlooked meanings, and to encourage his patients to attempt to solve their own problems. This requires much time and much effort. It requires a high degree of skill and a rich background of experience. It is a well-recognized principle of learning that the greater number of ways used to convey meaning, the more likely is it that the meaning will be unmistaken. It is this role which psychiatric treatment films are capable of filling.

Equally important is the need for psychiatrists to be able to communicate the principles of sound mental health and preventive medicine to large audiences. Ordinarily, the time permitted for this huge task is insufficient. Added to this is the lack of a sufficient number of skilled physicians to do the job. The training of a requisite number of psychiatrists is an expensive, time-consuming procedure. Audio-visual aids can, in part, fill this gap between the large body of knowledge which exists and the number of persons to whom it needs be communicated.

The Bureau of Medicine and Surgery early in the war recognized that the sphere of benefit of medical officer psychiatrists could be increased greatly by the utilization of both training and treatment film aids.

By a fortunate combination of planning and responsive acceptance, the Audio-Visual Branch of the Bureau of Medicine and Surgery has established a highly satisfactory liaison with the Training Film and Motion Picture Branch of the Bureau of Aeronautics. Through the combined efforts of advisory medical officers and experienced training film officers, a satisfactory production-team effort has been evolved, and many films dealing with a variety of medical subjects have resulted. Because of the newness of the entire field as it concerns psychological medicine and the need for careful lay and scientific definition, the psychiatric films produced thus far have been on what might be called an experimental basis. Their usefulness is being validated by medically controlled showings to selected patient and lay audiences. Follow-up interviews by psychiatrists ultimately will be able to answer a number of technical questions which have arisen.

A motion picture designed for the treatment of psychiatric patients whose disabilities are fundamentally emotional problems or problems of social adjustment, of necessity is constructed quite differently from the usual educational, or training or documentary, film. Its general purpose is to acquaint the patient-audience with the background and the mechanics of their psychological disabilities or illness, so that they see themselves as others see them. Also, and most important, films help them to understand more fully why they are disabled by explaining the purpose and meaning of their symptoms. Psychological illness, much like other kinds of sickness, doesn't "just happen out of the blue." There are good reasons and sufficient causes responsible for the symptoms which distress the patient, even though to the untrained observer the patient's complaints may appear unfounded, bizarre and inexplicable. Recovery from psychiatric symptoms requires that these reasons and causes be understood and fully appreciated by the patient.

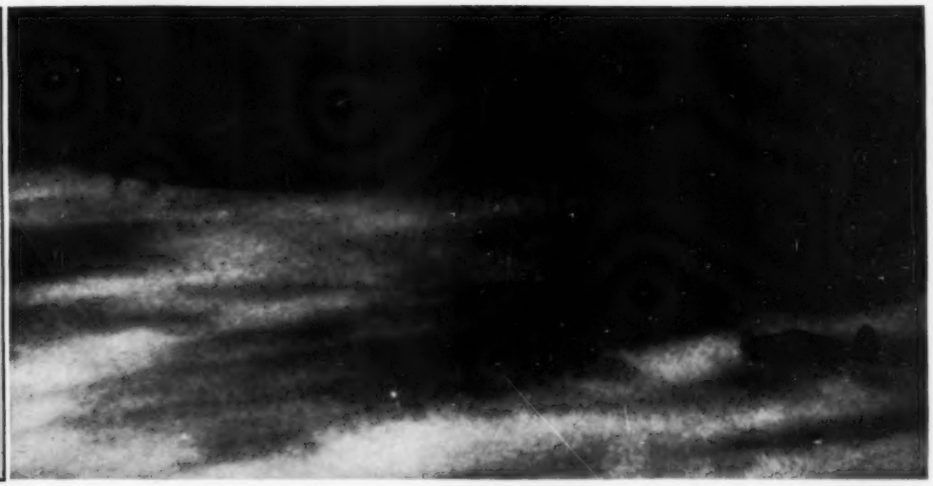
Psychological symptoms and psychiatric illness are mysterious and nebulous to most persons because the behavior they induce seems unaccountable. Moreover, in most instances the patient appears to be in good physical health. While such symptoms as pounding of the heart or an "all-gone" feeling in the pit of the stomach or headache or indigestion may also be present, getting well means understanding that these physical symptoms are not, as the patient sometimes thinks, the cause of his trouble, but in reality in most cases are its accompaniments or side effects.

From the foregoing, it can be seen that a film designed for the treatment of psychological problems has a large educational job to perform. If this were all, the task would be relatively simple. But a straightforward factual account, however interestingly portrayed, does not constitute psychiatric treatment. Psychiatrists have discovered from a long experience that explanation, even though it be simple, logical and extremely reasonable, is not sufficient of itself to bring about the disappearance of emotional symptoms. People's emotional lives, particularly those of psychiatric patients, are lived to a greater or lesser degree in "logic-tight" compartments, walled-off and insulated from all but the most appropriate and skillfully applied persuasion. Emotions, of which fear, hate and love are familiar examples, are too often blind, deaf and dumb unless they can be adapted to the person's best interests, molded by logic, and tempered with reason.

The basic task of a psychiatric film designed for the treatment of patients is to coordinate simple, understandable, educational training techniques rooted in facts, with an interpretive approach which compels each member of the audience to identify himself with the characters and situations being shown. Such an explanation must confine itself to ABC principles. It must tell a story in such a way that the audience is never so lost in or intrigued by the story that they miss the lesson the story illustrates. The situations in [*Turn to page 104*]

NIGHT VISION FOR AIRMEN

A Study in Light Contrasts



by Richard P. Buch, Lt., USNR

THE ABILITY to see at night is part of the experienced sailor's stock in trade. Unlike the average landsman, he has plenty of opportunity to develop his night visual capacity. Good night vision is the product of experience and training rather than innate ability. One of the best night vision instructors at the training school in New London was a retired chief signalman, who at 60 could see better at night than any youngster of 17. He claimed that he had picked up the knack of "off-center" vision, or looking "cock-eyes," as he put it, on his first tour of duty off the China coast, many years before. The rest was simply practice. For some time, he kept his "know-how" a secret and derived a tidy revenue by betting with unwary shipmates on his uncanny ability to pick up sightings far in advance of anyone else. Ultimately his secret came out. By dark-adapting their eyes and learning the off-center night scanning technique, many of his shipmates became even more owl-eyed than he.

When war started, on a 24-hour basis, good night vision became vital to the fleet. In a few short months, the Navy had to teach the fundamentals of night vision to thousands of men, most of them with little or no experience in using their eyes at night. The night vision synthetic trainers and the first Navy training film on night vision had to take the place of experience, so far as thousands of future night lookouts were concerned. Viewed critically, the first Navy night vision film has its visual limitations. The sound track and the animation bear the burden of teaching. But in 24 minutes it has told thousands of "boots" what they had to know about night vision. Better still, it was finished and distributed early enough in the war to enable them to put this knowledge to good use. A more recent condensed version does the same basic job in five minutes.

While the lookout film was doing its work, the course of the Pacific war made night vision training for naval pilots and aircrew a necessity. Early in the Solomons Campaign the Jap air force began to strike at night. The patrol plane pilots and crewmen who went after those first night raiders required no sales talk on the need for night vision training. Today, with night intruder missions on the upswing, and after-sunset carrier strikes increasing, naval airmen are discovering that night vision training is good life insurance.

A new training film about night vision for airmen is designed to assist in teaching night vision essentials to pilots and air crewmen aboard carriers and at advanced bases, where the installation of night vision trainers and other synthetic devices would be impractical. The original intention was to edit pertinent material from the Navy lookout film and from night vision films produced by the Army and the British. For two reasons this idea proved to be impractical. First, there was no visual material available on the special subjects peculiar to night flying. Second, a different type of audience was involved which called for different treatment and different situations. Night aerial effects were needed but none of the library material was suitable. All that could be culled from existing films was animation footage on the workings of the eye, a matter of secondary interest to flying men.

At this stage of planning, a five-day conference on night vision training was conducted by the Commander Fleet Air, Quonset, at which Wing Commander K. A. Evelyn, head of the RCAF Biophysics Laboratory in Montreal, Canada outlined his entire night vision instructor course. Dr. Evelyn, a scientist of tremendous energy and ability, is an outstanding leader in night vision training for aviation personnel. Borrowing liberally from the night vision training ideas developed under the Commander, Submarines Atlantic Fleet, New London, and from the lessons which the RAF had learned in their night bombings of Germany, he added the results of his own research and organized the best training syllabus then available. His work was invaluable not only for the training film, but in standardizing the entire Navy training program.

Within the limitations of the motion picture medium, the new film on night vision for airmen covers some of the basic lesson taught first hand in the Evelyn Two-Dimensional Trainer. This trainer consists of sharp two-dimensional shadowgraphs of a countryside panorama, or seascope, projected, ten times magnified, by a controlled illuminator lamp against a large screen in a blacked-out classroom. Completely blind at first, the audience, during a thirty-minute lecture and demonstration, goes through the various stages of dark adaptation; first, "contrast perception," the primordial night visual experience; second, "simple form perception," in which larger objects of characteristic shapes are observed; and, finally, complete adaptation, in which details become more clear, and "complex form perception" is possible.

The first of these stages, "contrast perception," is the primary visual task of the night lookout, who in dim starlight sees a black blot on the dark horizon, and of the pathfinder pilot, barely able to make out the difference between a white beach and a pitch-black sea. At the second stage, large forms of characteristic shape are identifiable, particularly if they are familiar, or if the possibilities of choice are limited. A Navy PBY can be distinguished from a Jap "Zeke," for example, if these are the only alternatives. More details become apparent, with full adaptation, and the experienced pilot, if well briefed, can effectively attack his ground target, using visual clues not perceptible to the unprepared eye.

As a medium for illustrating these gradations of night visual acuity, the motion picture film can never compete with the Evelyn trainer. This fact was recognized at the outset. The basis of photography is light. The trainer illustrates occular phenomena occurring at light levels far below those which a camera can record on film. The trainer has the further advantage of demonstrating with startling impact, and at first hand, the total effect of complete dark adaptation. After a half hour in the trainer, one eye is covered while the other is exposed to brilliant white light. Then darkness is restored. The eye that was covered sees the silhouettes as well as ever. The exposed eye is completely blind. Here is a direct experience, compared to which a motion picture is like one of Plato's shadows on the wall of the cave.

In the training film, on the other hand, it is possible to explain by [*Turn to page 112*]

...about SLIDE FILMS

by Maxwell M. Desser, Lt. (jg), USNR

IN THE rapidly maturing family of audio-visual aids, the slide film is one of the children which has "grown-up." Unfortunately, there are many users of audio-visual aids who fail to recognize the importance of the slide film and how it can be used most effectively.

The slide film is graphic literature dressed up in the clothing of motion pictures. It combines the power of pictorial presentation that gives graphic literature its strength with the might of the motion picture to arrest instantaneously the attention of a group of people upon a single enlarged area.

Slide films are of two types: the silent slide film which has printed descriptions and explanations on the film itself, and the sound slide film which carries the story expressed in illustrations supported by a recorded narration and other sound synchronized with the film. The nature of the subject matter governs, to a large extent, which type of slide film to be produced. The chart presents some advantages of each type, and conditions which may determine whether the slide film should be silent or sound.

In the process of producing a slide film, there are many important factors to be kept constantly in mind, but three essential considerations are:

1. SEQUENCE OF SUBJECTS.

The sequence and continuity of the story to be produced should be carefully organized. The subject matter should be presented in a logical order with ideas grouped when sub-division is necessary.

2. SCRIPT & ILLUSTRATION.

The script and illustration *for each frame* should have a direct relationship to each other. The subject matter mentioned in the script should appear in the illustration. In order to achieve this relationship, script and illustration for each individual frame should be planned together. In this manner the marriage between the script and the illustration is direct and complete.

3. EMPHASIS.

When emphasis is applied to any part of the script, the subject being emphasized should appear clearly in the illustration. Here the application of an arrow, circle, or other means of gaining added visual attention can be utilized. Superimposing printed words and an arrow over the illustration help to achieve rapid identification and emphasis. When arrows are used for emphasis, care should be taken to design them so as to cover that part of the illustration of least importance. This can be accomplished by using short and stubby or long and thin arrows. Keep art work functional and script and design simple.

When the subject matter of a slide film is complicated in the extreme, the use of color can contribute emphasis, clarity and interest. For example, symbols in color which show the flow of electricity or liquids in intricate devices have proven valuable. Color has been useful, too, in statistical presentations. When used functionally, color can contribute to the effectiveness of many slide film subjects.

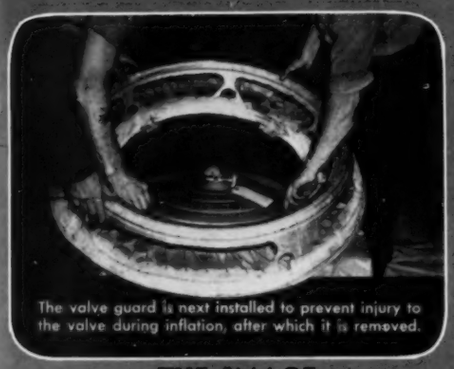
An extremely useful form of slide film is obtained when a sound slide film can be used without the recording apparatus and still convey a completely self-explanatory story. In this case, the basic information is incorporated in the pictures of the silent film strip itself, and then supported and enlarged upon by the recording, making use of whatever additional contribution sound can make to the subject. In this type of sound-silent film combination, the sound film can be screened first and then be used subsequently as a silent slide film, thereby combining the advantages of both types.

Although the nature of certain technical and constructional subjects will be most advantageously presented in the form of the silent slide film, the sound slide film is rapidly expanding its sphere of usefulness. In addition to the advantages already listed for the sound slide film, this type of film can at times achieve a cinematic effect when the subject matter lends itself to motion *not seen* but SUGGESTED through sound synchronized with the sequence of a group of frames.

Here the inference of movement caused by sound while seeing a series of motionless images on the screen projects animation on the MENTAL screens in the minds of the audience: the motion or action that occurs between those frames actually takes place only in the imagination of the audience. If, for instance, we were to see a still picture of a train with smoke pouring out of its funnel while crossing a bridge, and at the same time we would hear the blowing of the train's whistle and the characteristic puffing of its engine and HEAR the slowing up of the train, we would actually *visualize* that train SLOWING UP. Now, if in the next frame we were to see that train discharging passengers at a station and at the same time we were to hear the slow, soft panting of the train's engine blended with the voices of a few people who were at the station greeting the passengers, the two pictures plus the recorded sound would give us the impression of movement and live action. This subconscious visualization of movement links together the actual sequence of frames creating the impression of motion. The use of color, especially in films of this nature, tends to promote even greater reality.

When choosing a form of audio-visual aids, it is well to remember the conditions and advantages the slide film has to offer. The slide film is not a step-child but an important instrument that can be used successfully against the elements of time, expense and complicated subject matter. It is an important member of the family of audio-visual aids.

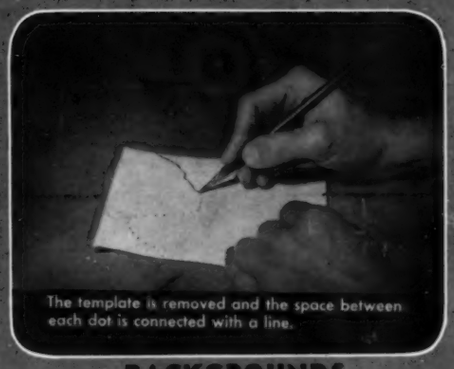
	SILENT SLIDE FILM	SOUND SLIDE FILM
Conditions favorable for use:	1. When subject matter is very detailed and complicated and calls for concentrated and extended study of each individual step or process. 2. When the medium of sound will not help to increase interest or promote reality. (as in the case of a technical or constructional picture).	1. When sound helps to portray or create the actual conditions under which the subject matter exists (sounds of the jungle; motors, etc.) 2. When sound can lend clarity, emphasis, and drama. (Modulation of voice of narrator; voice of two or more people; musical effects, etc.) 3. When sound is actually necessary — (teaching foreign languages; identification of sound; etc.) 4. When motion may be suggested through sound; (creating an impression of movement).
Some of the Advantages	1. The film can be paced at any desired speed and turned back easily to a frame previously shown. 2. Projector can be turned off for discussion purposes and then continued without having to synchronize a record. 3. Projector is sufficient equipment. No need for additional equipment to play records.	1. It is easier to listen to a narrator while studying the illustration than to read and study the picture simultaneously. 2. Sound helps to keep the audience more attentive. 3. Sound is a "natural" element. (We are accustomed to hearing things).



The valve guard is next installed to prevent injury to the valve during inflation, after which it is removed.

THE IMAGE

Keep the subject matter large. A hand or other familiar object appearing in the illustration helps to show the comparative size.



The template is removed and the space between each dot is connected with a line.

BACKGROUNDS

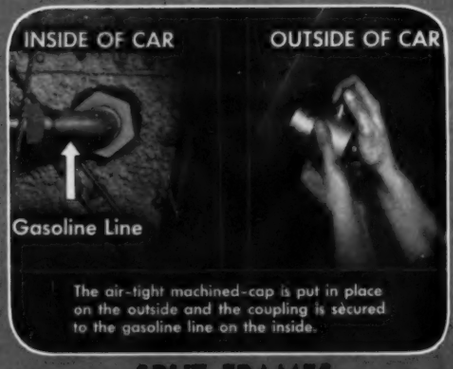
Keep backgrounds subdued and simple. Do not let unnecessary objects or complicated shop gear confuse the subject matter.

RETOUCHING

Simple retouching is usually all that is necessary to snap up the image and bring out details.

INSERTS

The use of inserts is an excellent means of showing both the entire object and part of the same object greatly enlarged.



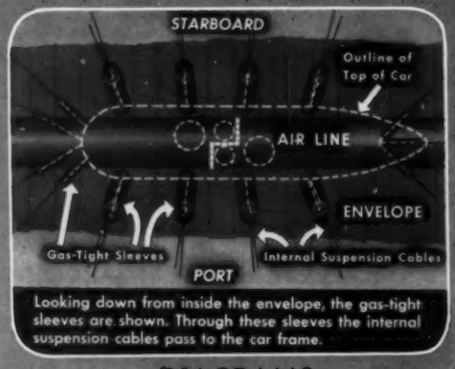
The air-tight machined-cap is put in place on the outside and the coupling is secured to the gasoline line on the inside.

SPLIT FRAMES

Split frames (two illustrations) help to show related subject matter.

EMPHASIS

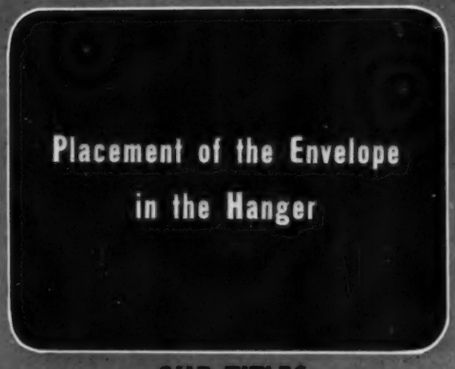
Arrows, circles, airbrushing, and superimposed type arrest attention and provide emphasis.



Looking down from inside the envelope, the gas-tight sleeves are shown. Through these sleeves the internal suspension cables pass to the car frame.

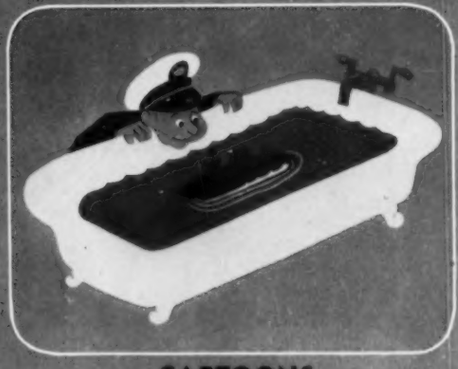
DIAGRAMS

Use diagramatic drawings to illustrate objects and processes that cannot be shown by photography.



SUB-TITLES

The use of sub-titles helps to separate the film into sections and to introduce frames grouped in a series.

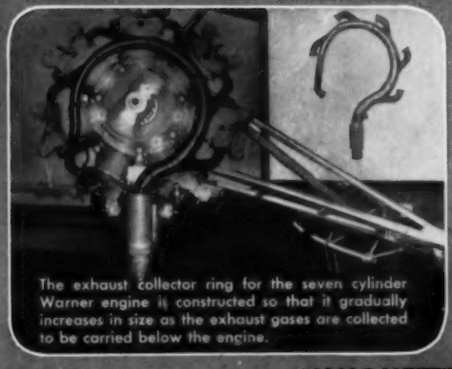


CARTOONS

Cartoons serve to add interest and create a change of pace.

MODELS

Models are helpful when the actual subject matter is too large or can not be photographed easily.



The exhaust collector ring for the seven cylinder Warner engine is constructed so that it gradually increases in size as the exhaust gases are collected to be carried below the engine.

The SEVEN EXHAUST PORT TUBES are part of the Exhaust Collector Ring. They connect each of the seven cylinders to the main sections of the collector ring.

SILHOUETTES and OPAQUES

When the subject matter is complicated and detailed, silhouetting and opaqueing help to simplify and clarify the illustration.

"Cameras are guns—pictures are bullets"

Pictures Are Bullets

by Howard L. Luray, Sp(P) 1/c, USNR

Unsharpness like this is another matter. Without the lathe and propeller blade motion, this picture would seem static and unnatural.

Here is a picture that has lost a lot of effectiveness because of flat lighting.

Flash saved this shot from a flat fate. It was taken during a drizzle.

Problem: Find the teaching point.

A HIGH RANKING officer said early in the war, *"Cameras are guns; pictures are bullets."* The Navy Training Film and Motion Picture Branch and its producers turn out a lot of effective bullets, but without high quality photography those bullets might well have been duds.

Good photography is particularly important in slide films. The clarity and interest of still pictures depend heavily upon photographic techniques such as sharpness, lighting and angle. Faults in any of these factors prevent films from getting across their full message. This is especially true of highly technical films. These seldom have the elements of human interest, sex appeal, or humor to help them "get by" in spite of poor photography.

A survey conducted a few months ago revealed that many slide films could be improved by better photographic quality. Difficulties usually encountered in shooting photographs on location were taken into account; such as, lack of time, lack of cooperation, and poor weather conditions. Only defects which could have been corrected, regardless of the difficulties, were tallied. The defects were NOT due to bad strip printing. Some of the films reviewed had as many as fourteen or fifteen frames with poor photography; a few were almost perfect. The average, however, was approximately six faulty frames in each of the thirty films reviewed. *All of them could have been corrected before or during the frame card stage.*

The purpose of this article, therefore, is to present some ideas of what should, and should not be expected from photographers. To those who know photography, some of these points are elementary. But it is constant attention to such details that makes good films.

SHARPNESS

★ *Unsharpness* is one of the most common faults in slide film photographs, and this is extremely difficult to correct by retouching. It spoils the effectiveness of any picture.

The usual causes of unsharpness are: a bad lens; camera in poor condition; range finder out of synchronization; camera movement; buckling of film; bad printing; or just plain lack of focussing. In the majority of cases, careful camera handling can prevent it. Here are a few precautions to prevent unsharpness:

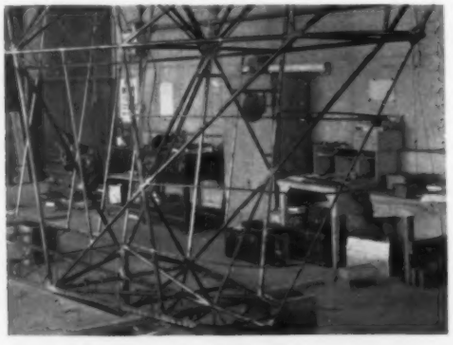
1. A photographer should work with the finest equipment, and should treat it as he would any precision instrument. Each piece of equipment, particularly the range finder, should be thoroughly checked before going out on jobs, and at frequent intervals during lengthy assignments.

2. Focussing should be done carefully—on the ground glass, if there's doubt about the accuracy of the range finder—and the photographer should be familiar with the depth of focus table for the lens used.

3. A tripod is one of the best types of sharpness insurance. But if there's heavy machinery in operation nearby during the exposure, a tripod is out. Under those circumstances, it will transmit more vibration to the camera than will the photographer's body.

4. Cut film, rather than film pack, is desirable to cut down chances of buckling in the camera and enlarger.

5. Enlarging cameras should be focussed carefully and must be in first class shape, particularly with respect to the parallelism between lens board and film plane.



The idea was to show the gondola framework . . . everything including the photographer's camera case is in the background.

Here's one of the many cases where a low camera angle not only simplifies background problems, but gives a very desirable feeling of size and power.

LIGHTING

★ Sharpness is strictly a mechanical problem—lighting is not. Really good lighting is the result of imagination and experience. Smart lighting saves a lot of retouching, and enables training films to do a better teaching job.

Good lighting, however, doesn't indicate complicated lighting. Two or three lights are often all that's needed. Keep in mind these few lighting points:

1. Flat lighting results in dull uninteresting photographs. Details are lost because there are

no shadows and highlights to pick them out. Too much contrast is equally bad. Normal contrast is the goal—clear but not burnt-up highlights, and plenty of detail in the shadows. Remember, abnormal contrast on the frame card will be greatly magnified in the 35mm print.

2. Diffusers over lights, or reflected light, helps cut down the glare from shiny surfaces. A polaroid filter can usually do the rest. Naked lights in polished reflectors are employed too often in shooting things like instrument panels and machinery.

3. One way of eliminating distracting backgrounds is to let them go dark and inconspicuous by moving both subjects and lights away from the confusing surroundings. A little forethought and elbow grease will mean retouching time saved.

Almost anything done with floodlights can be done quicker and easier with flash. But the old single-flash-on-the-camera technique will give only the usual harsh, flat, night club picture results. Good multiple-flash set-ups might be a bit troublesome, but they pay off in far better and more easily printed negatives.

The ability of flash bulbs to brighten dull days is one of the greatest advantages a still photographer has over movie men. He can obtain good brilliant shots under almost any weather conditions, but that advantage is too-seldom exploited in slide film photography.

Synchro-sunlight flash is sadly neglected for use in balancing dimly-lit interiors with bright exteriors, and for throwing light into shadows cast by the sun. True, synchro-sunlight can be overdone. Nevertheless, there's no logical reason for not using it when detail in the dark spots may help put over a teaching point.

Naturally, flash equipment should also be checked frequently and kept in topnotch condition.

PRINT QUALITY

★ If you're stuck with a poorly lit shot that can't be retaken, avoid high blood pressure. A good darkroom man may save the day. He can work wonders with a bad negative by such tricks as "dodging" or holding back shadow areas to print in detail, and "burning-in" highlights.

Anyone who deals with still photographs should spend a few hours watching an experienced lab man at work. Better yet, try making a few prints under his direction. Experience is the best way to understand [*Turn to page 86*]

Crop out everything but essentials.

The Training Film Art

by Herbert R. Jensen, Lt., USNR

DURING the war, the training film has become a strong contender for the limelight in which the theatrical film has basked for many years. Educators, as well as the public at large, have heard and read more about motion pictures with a training purpose in the past two years than they had in the previous ten. Producers have been turning out such films to an extent unknown before the war. American service personnel, officers of all ranks and men of all rates, have discovered the impact of the educational screen.

In the brief span of the past four years, educators, artists, film technicians, writers and producers, in and out of uniform, have had a concentrated experience with training film production that would not have been possible in a decade or more of normal peacetime development. This experience in making films to achieve a multitude of different training purposes and objectives has helped to develop and advance the training film art.

The training film art is the skillful blending of the art of instruction with the art of the screen. Both of these are complex and the successful amalgamation of them into an effective, excellent training film is not an easy achievement. The training film art is comparatively new. No extensive background of experience or research has been available to guide those involved in its creation. For one thing, the motion picture screen, prior to the expanded film program of the armed services, dealt primarily with subjects either of a general nature such as the typical theatrical film, or at the other extreme, of a very specific nature such as the instructional film.

The theatrical picture, while based on a semblance of fact, was essentially a creation of imagination and as such allowed its makers a considerable latitude of freedom in its development.

Few of the pre-war instructional films attempted to cope with the innumerable complex facts that make up the content of the bulk of present day training films.

The demands of war training on the instructional screen expanded the range of types of subject matter for screen presentation to its widest possible extent. The one extreme of this range is typified by the highly technical details of radar operation while the other is typified by the behavior changes involved in transforming a civilian of peaceful attitudes and occupations into an effective and technically competent fighting man.

To encompass this range of jobs effectively the motion picture art as it had been known had to be modified. Something new was added to it and that something new was the art of instruction. A knowledge of the art of the motion picture did not necessarily entail a knowledge or even a familiarity with the art of instruction. The reverse was also true. However, the war forced the blending of these two and created the training film art.

A salient difference exists between the art of the theatrical motion picture and that of the training film. In the training film, art and imagination are more often harnessed to fact. Fact and accuracy are indispensable elements and they make rigorous demands on the skills of production personnel. In the best of training films both the ideological and technical aspects of the motion picture art must serve fact.

Ideological Aspect: The ideology of films refers to the science of ideas used in developing a screen presentation of story or subject matter. The ideology of the theatrical film is primarily the science of entertainment ideas. The ideas used in the theatrical film must entertain first. Whatever residual knowledge is left with the viewer is incidental. In addition, the ideology of the screen presentation of a theatrical film is more often both the story and the content, which is as it should be for ideology must grow out of content.

Unlike the theatrical film the ideology of the training film art is primarily the science of instructional ideas. The ideas used in the development of a screen presentation of subject matter must instruct first. Whatever residual entertainment is left with the viewer is incidental. While the ideology of a training film should grow out of its subject matter, this does not always happen. Many training films leave the impression that the ideas employed in the screen presentation have been hung like washing on the outline of subject matter rather than growing out of it.

The ideology of the train- [*Turn to page 106*]

SEEING-EYE SERVICE

TODAY, thanks to technical progress in process photography, animation, color and special effects, the training film producer has countless new techniques with which he can by-pass the sound track and cut straight through to the *visual* point of his subject:

Visual Techniques

. . . the activation of dull though pertinent live-action footage through the use of superimposed line animation . . . the arbitrary juxtaposing of independent but related objects through the use of the montage . . . the utilization of significant stills, such as historical prints or photographs, by producing an effect of animation or motion through camera movement . . . catching a particular mechanical or physical action with stop-motion or stroboscopic photography . . . obtaining an X-ray view of a subject with a combination of a plastic model and cell animation . . . interpreting an otherwise complex concept or principle by reducing it to its lowest common denominators in terms of the humanized cartoon . . . etc., etc.

Though too few of the producers of fact-films have begun to take advantage of these techniques, they are basically the same as those which have long been exploited by top-ranking advertisers and publishers. This perhaps can be explained by the fact that the latter, in their perennial search for new ways to stimulate and inform their "audiences," fully appreciate the creative contributions of *both* writers and artists.

The garrulous script is usually the brain child of a writer who has become so intoxicated with the sound of his own words that he attempts to *talk* his way out of his script problems, rather than see his way through them.

Pictures vs. Words

The cub film writer, still in the habit of writing to be *read* or to be *heard*, may have an understandable weakness for words. The professional should know better. If he can't see the picture for the

★ ★ ★

(Left) An artist suggested this as a substitute for the usual academic introduction with its thin and unconvincing "documentary" disguise.

words, his script will listen better than it looks.

Since too many of its scripts played better on the Victrola than on the Movieola, the Training Film and Motion Picture Branch decided that two heads instead of one might be the answer, provided the *other* head had the stubbornly graphic viewpoint of the artist.

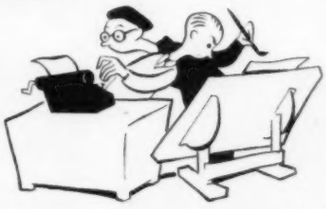
Convinced that even the ablest writers had nothing to lose through collaboration with artists, the Training Film and Motion Picture Branch set up a sort of experimental Seeing-Eye Service:

Graphic Elements

Starting from scratch, the Navy story-sketch artist can now give his subject a thoroughly graphic third degree, with no holds barred: *Can it be photographed? . . . Live action, stop-motion or "trick" Photography? . . . Does it need actors? . . . Laymen, professionals or cartoon characters? . . . Does it need interpretive devices? . . . Animated symbols, charts, graphs, maps? . . . Would special effects help? . . . Split screen, montage, X-ray or phantom views, matched dissolves or cell overlays?* . . . and so on deep into the midnight oil, until

by Robert Schmuck, Lt., USNR

THIS . . .



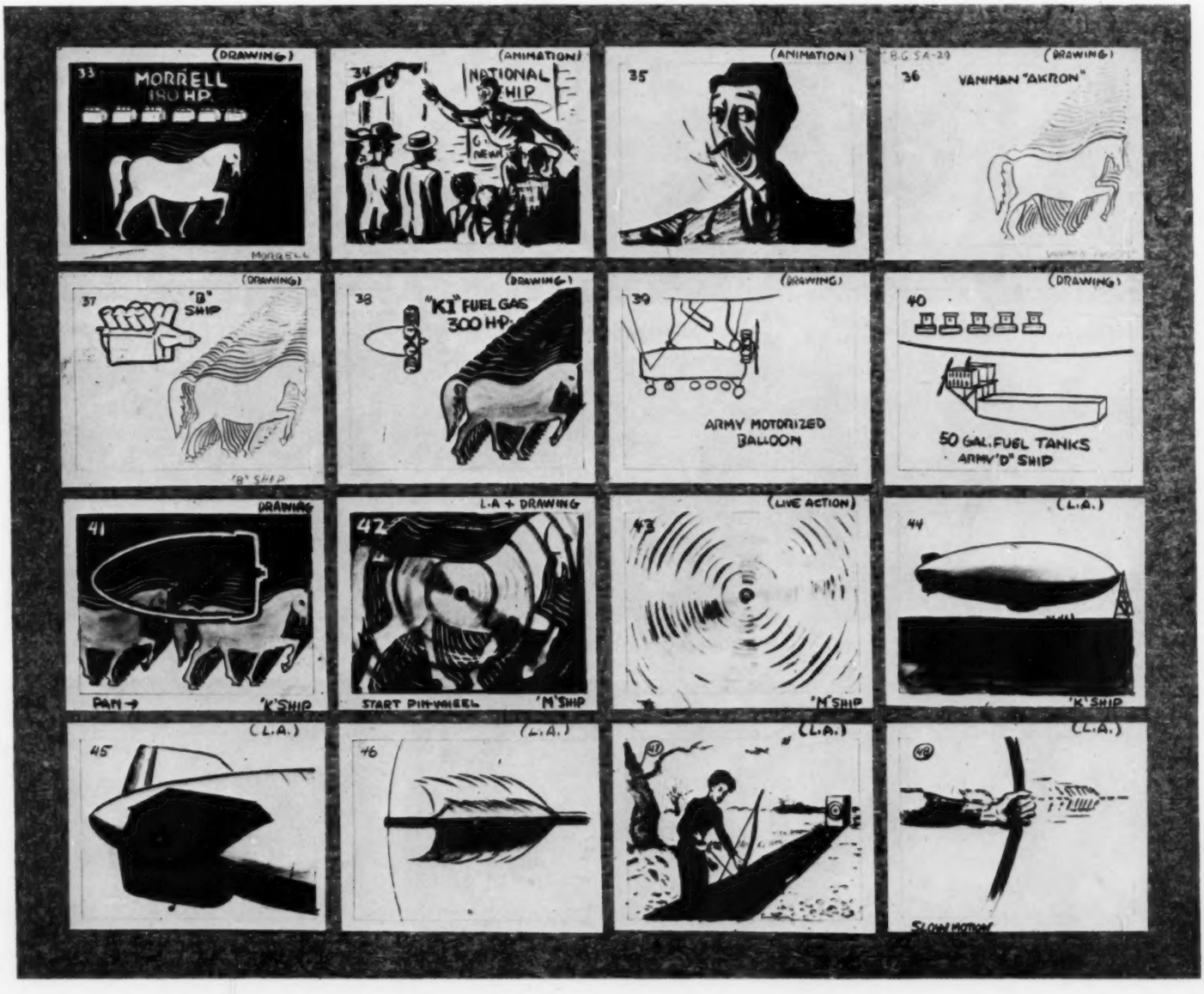
NOT THIS . . .

(Below) This section of a story-board on the *History of Pressure Airships* suggests the range of screen techniques which can be used in interpreting a subject from a strictly pictorial point of view.

he has forced his subject to reveal its basic graphic character.

Once this has been established, he can concern himself with the more particular problems of communicating with the audience—Seaman Sam . . . a *pictorial analogue to catch his eye and jog his mind . . . a fresh treatment to see him through an unpromising nuts-and-bolts sequence . . . a sort of cinematic figure-of-speech to orient him at a turning point* . . . always on the lookout for that proverbial picture which can speak for a thousand words or, better yet, for a thousand pictures.

Because it allows both artist and writer to rough-draft their respective points of view *before* setting any final story line, the Seeing-Eye Service is paying dividends . . . frequently the difference between putting Seaman Sam to sleep and putting him *wise*.



presentation of the specific problems in this combat mission.

All information necessary to answer questions asked in the film will be indicated and must be taken down!

Shut off film while class determines magnetic heading to intercept the enemy.

NOTE:
At this time additional navigation data to vary the problem may be furnished the class at the instructor's discretion.

"Here are the facts—take them down" . . .

"Get there, hit 'em and get back"

"Correction—get it!"

"Chart it!"

"This is it—we're off!"

"Identify your own task force."

"Got one!"

"The enemy task force!"

"A hit . . . !"

"Set your course . . ."

SIMULATED COMBAT MISSIONS

An original and highly effective new use for Navy Training Films

by Erskine F. Gilbert, Lt., USNR

THE CASE history of *Simulated Combat Missions* bears out the truism that most new ideas do not spring Minerva-like from the mind of any one individual. The concept behind this series of training films was the composite brain child of a group of alert training officers in the Ground School at the Naval Air Station, Miami, Florida. While giving competent instruction to pilots in navigation, recognition and communications—the three R's of carrier operations—these officers were nevertheless acutely aware that something was wrong. These were not uncoordinated subjects to be taught like French, trigonometry and philosophy. Perhaps their teaching didn't go far enough. The answer to these speculations was to be an original and highly effective training technique.

First, these men asked themselves: What was the *ultimate* objective of training from the pilot's viewpoint? Was it to be proficient in navigation, communications and recognition? Except in an academic sense—clearly not. Practically—for pilots so near to combat—the ultimate goal of training should be to enable them *to go out from their carrier, perform their assigned tasks—and get back!* In short, the accomplishment of a mission. Now, was pilot training toward that end adequate which left until actual combat the coordination of these proficiencies? Again—negative. From such simple reasoning, the officers determined that navigation, recognition, and communications should and could be combined into a single package at the training level.

Soon, groups of pilots were being taken on regularly scheduled classroom "hops." As yet, the use of film was confined to the recognition sequences; navigation and communication sequences were acted out by "live" specialists—but all were reduced to problems requiring answers or interpretation by the class. Despite its crudity, this progenitor of the *Simulated Combat Mission* series had effectively solved the problem of integrating training in the three carrier R's and relating them realistically to a combat assignment. Here also was the genesis of the feature which was to be the most significant contribution of the later, more polished all-film version, i.e., the constant and pertinent participation of the audience in activity postulated by the film itself.

Word of the success of this new teaching tool soon filtered through the Naval Air Operational Training Command in Jacksonville to the Aviation Training Division of the Chief of Naval Operations in Washington. Acting on a request by CNO for a series of films using this new technique, the Training Film and Motion Picture Branch with the technical advice of aviation training experts and pilots recently returned from combat, planned a series of films. A program of seven films geared to the NAOTC training syllabus was established and production outlines of problems based on typical offensive carrier operations written up. An attempt was made to keep the problems within the realm of strategic likelihood but sufficiently in advance of actual operations to prevent their being stale by the time of the films' release. The series of films was assigned to a commercial producer under the supervision of the USNPSD and the cooperative effort on the new training film technique began. Needless to say the vicissitudes of production were not inconsiderable, but enthusiasm was maintained throughout.

Dissolving quickly through the period of research and development for a clear picture of the finished product, we now invite the reader audience to participate, if only through the written word, in a typical *Simulated Combat Mission* (for, varied as the films are, they all follow a basic training pattern).

Equipped with plotting board, pencil, scratch paper, etc., you enter a naval classroom with 20-30 other pilots. A training officer briefly explains the nature of the film and passes out answer pamphlets containing further information all carefully integrated with the film's problems. Conditioned to other training films not requiring recorded answers, you probably are vaguely nervous. Now—lights out!

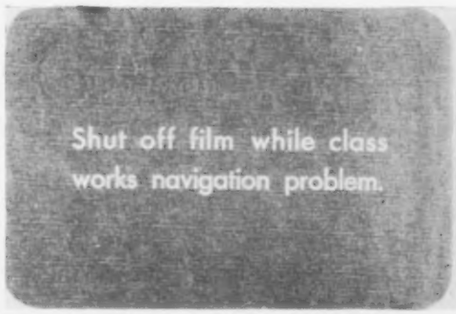
First, a few establishing shots, then—the call to flight quarters! You hurry to the carrier ready room. The camera quickly moves up on the squadron commander to exclude the assembled pilots. The class of which you are a member now becomes the squadron about to be briefed. *From this point, reaction shots, abrupt changes of locale or viewpoint, etc., which damage the fiction that you are a carrier pilot, are eliminated as far as practical.*

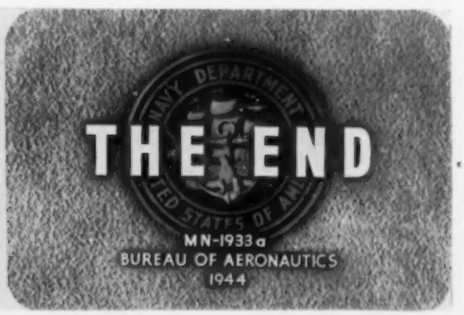
The squadron commander tersely states the mission, then referring to the ready room blackboard, briefs you on the navigational and other necessary data. *Camera holds on the blackboard long enough for you to take this information down; sufficient light is furnished by partially raising classroom blinds or using individual desk lamps.* He then asks you to set up your plotting boards and to determine your heading to intercept the enemy.

A title instructs the operator to shut off the film and restates the problem. With lights turned on, the class is given 10-15 minutes to work navigation and record heading on answer sheets. The training officer then checks answers as it is felt undesirable for pilots to be "lost" at this early stage of the mission. Film is then resumed.

The loud speaker barks "Pilots, man your planes." On the flight deck planes are turning up—several take off—you climb into your plane—an enlisted man displays a blackboard with a last-minute change in the enemy's course—you pull out your cockpit plotting board and take this information down. A signal from the Fly One officer and the flight deck gathers speed beneath you—then drops away. *Camera mounted in plane maintains pilot's viewpoint.* While circling for rendezvous, you use this time to correct your navigation. *Title stops film and requests new heading. Since the problem is already plotted, your correction takes only 3-4 minutes.*

After joining up with [*Turn to page 111*]





"Mission Completed!"

A Check-List for Improving Training Films

by Richard B. Lewis, Lt. Comdr., USNR

WHEN every training film reaches the screen in final form, the preview audience sits in solemn, and sometimes glum, judgment. They can always see how even the best training film could have been improved. The staff of the Training Film and Motion Picture Branch of the Bureau of Aeronautics has reviewed hundreds of training films produced by or for the Navy to be used in its training program. As a result, they have established for themselves a number of minimum criteria for an acceptable training film. Beyond these criteria, the ultimate judgment of the effectiveness of a training film must be made in the classroom. However, the check list which follows may be applied by film producers to guard against a number of the faults which in the past have weakened some training films.

Film Length

√ Many training films, both slide films and motion pictures, are too long. They are overloaded with details, attempt to cover too much material, and are impractical in length for efficient utilization in the classroom.

Reports from Navy training activities indicate that films from ten to twenty minutes in length are most practical for average established curricula, and for effective utilization in the usual one-hour class session. If the subject matter is complex, a series of short films is most desirable. In a recent example, a script on a new and intricate device contained material for a 36 minute picture. Analysis of the script showed that the contents could be divided into four 9 minute films, each presenting one complete aspect of the instrument: adjustment, tests, operation, and maintenance. Minor changes were made in the script, and four short films were completed which have proved effective in the training program.

The next time you see a training film, think of its length. Have the attention limits of the audience been considered? Will the film fit the curriculum and the class schedule? Is the film too long?

Film Organization

√ Many films lack plan. Some, for example, are organized like a string of beads.* The string of beads treatment appears often in films which purport to instruct students how to run a machine or device. One recent film told how to start a complex engine. The film starts with a long shot of the engine; the sound track warns the student that the task is a difficult one. The film proceeds from valve to lever to dial to lever to valve to button to dial and so on for over twenty minutes. No man can remember procedures with such a presentation, even if he stays awake until the end.

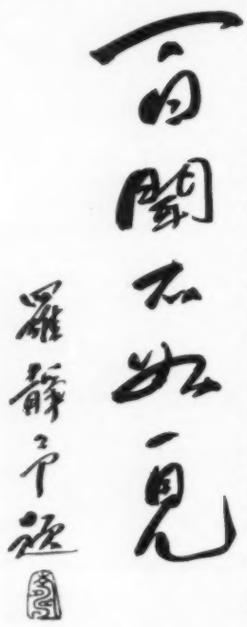
Training films must be organized into clearly defined large groups of ideas, and within the large groups, smaller groups should be evident.

The best training films have clear and simple organization which is carefully defined before any script work is started. Check the organization of the next film you screen. Is the organization clear, logical, and easily remembered?

*This expression is taken from INFLUENCING HUMAN BEHAVIOR, by Harry A. Overstreet, a book containing many principles of effective communication which may be applied to the improvement of training films.

Narration

√ The function of the narration in a training film is to support, explain, and clarify the picture. The narration can explain the "why" of an action, can give emphasis to an important point. A sound track loaded with talk-talk-talk is actually an obstacle to learning. Since the picture unquestionably should visualize the major teaching points in the film, the addition in the sound track of a great number of qualifying, descriptive, or technical points for each picture sequence can prevent the student from getting a clear impression from the film. Silent areas are important in the sound track. Let the audience look and think in silence; then an indispensable explanatory comment follows will be heard and understood.



"Hundreds heard not like one see . . ."

One flagrant example of useless narration is to be found in a recent film: the narration states, "A crane picks up a truck, swings it over the ship, and lowers it into the hold." On the screen, the crane picks up a truck, swings it over the ship, and lowers it into the hold. If any narration at this point in the film is desirable, it could be used to point up the special techniques in handling the crane, safety precautions, or some other teaching point required in the plan for the film. Otherwise, silence is appropriate. There is no necessity for elaborating the obvious.

It is recommended that producers run each finished film with the sound turned off. Try it. Does the picture tell the story? Then check the narration for needless talk. Does the narrative make for a better understanding of the picture on the screen? It should.

Motion Picture Technique Vs. The Illustrated Lecture

√ A personality, an individual talking at the audience, often appears in training films. Instead of showing on the screen a new rocket, the film shows a handsome narrator sitting at an executive desk talking about the new rocket; or, a lecturer, pretending to be an old and experienced rocket handler, talks about handling rockets; or a group of actors talk to each other about how effective the new rocket is said to be. Words and personalities are substituted for pictures. Here is the old Chinese proverb which applies PAI WEN BU RUE I CHEN *(Hundreds heard not like one see).*

In training, *things* are important far more often than *personalities.* And with all the possibilities of animation, high speed and low speed camera work, and so on—things can be made dynamic through imaginative use of the camera.

Again, run a training film with the sound track turned off. Is the picture really a graphic, visual presentation? Or is it unnecessarily an illustrated lecture?

Camera Angles & Close-ups

√ Many training films indicate clearly that the scenes to be photographed are not sufficiently planned in advance, with the result that the script does not provide for complete photographic coverage of the subject.

In one film the installation of an exceptionally simple but heavy piece of gear under the wing of a plane was to be shown. The script did not detail the camera angles, but simply stated opposite the written narration, "camera coverage to suit." One set-up was used by the cameraman and director, because the entire installation of the gear *could* be seen from one set-up. Fortunately, a technical change in the gear necessitated re-shooting the sequence, and a new director was assigned. The retakes showed the installation from eight angles, which included pictures of how the gear was picked up and lifted to position, how the cleats engaged the wing hooks, how the pins were inserted, how the safety keys were installed, how the security of the attachment was tested, and how the gear appeared from side, rear, and front when installed. The screen time for both the treatments was identical, but the teaching value of the second coverage was vastly improved. Each action had received special photographic attention.

Sometimes special equipment is necessary and thoroughly justified in order to insure adequate camera coverage of a training film subject. One Navy film successfully demonstrates a difficult problem in bench-work on a complicated device. The viewpoint of the technician is maintained as he works on several sides of the device. To photograph the work from the technician's viewpoint, a large U-shaped track was made, upon which the camera traveled around and behind the technician as he worked. The camera recorded the work as seen by the eyes of the technician, and the audience seeing the finished picture participates [*Turn to page 119*]

Story Development and Plot Control for Training Films

A Statement by the Project Supervision Section of the Training Film and Motion Picture Branch.

THE METHOD of story development adopted for Navy training films is simple and direct: "Find the story *in* the subject, not create one about it."

This approach grew out of the fact that for too many years motion pictures were designed primarily to give audiences maximum enjoyment and relaxation. Any call to action as a result of seeing the picture was secondary or, more likely, non-existent. It might be said that for these entertainment films, the producer starts with a plot and looks for an audience.

But for training films, the Navy has an audience, and must look for a plot—the story *in* the subject.

This task of reducing complexities to simple terms—of seeking out the innate excitement of a subject—is fundamental in planning training films that will inspire audiences to calculated actions. A deadly airborne rocket, for example, is exciting enough in itself and an outside story woven around its use could confuse the basic training aspects of the weapon. Because the Navy has a hand-picked audience waiting for the film, and also because the Navy film producers know where and when the picture will fit into the curriculum, there is no need for promotion, nor need for "selling" the film.

Straightforward Stories Required

As more and more thousands of bluejackets and Marines have experienced combat, the more they want their facts straight from the shoulder. For these men it has become a life and death matter to know, for example, how to install a "wing nut" on the rocket releasing mechanism. The Navy gives these men their facts straight.

It must be said, however, that "mental conditioning" or "attitude" creating films do require a story, and more planning and skill in production than most entertainment pictures. Typical would be a film on physical fitness for WAVES where the "villain" is a sagging tummy and an expanding beam. This type of incentive film is given a story-line to create and hold interest.

In either type of film, plot control is required to make the process of learning as pleasant and thorough as possible.

Every one of the hundreds of Navy motion pictures and slide films is a means to an end—answering a particular training problem in the Navy's vast training program. Whether the film is for "boots" or "officers," or whether it is shown at a training school or on the hangar deck of a carrier, the film must either teach specifics or create an attitude by indirection.

Control Procedures Established

These films must be useful teaching aids, and time is precious in making them so. There is often no opportunity for retakes . . . little time to tear scripts apart once they are written . . . and more important, there can be no compromise with the *personal* ideas which directors, animators, actors, narrators, and editors might want to interject during the closing stages of film production.

So, to keep many films as effective as possible, moving through production as fast as possible, the Training Film Branch adopted a standardized system of production control. That system had to be flexible enough to accommodate films of any length on any subject. It had to provide for alterations of any kind at any time and be sufficiently standardized to facilitate periodic inspection of each film at each major stage in production.

Here's how the control system works. First, the Branch assigns an officer as a Project Supervisor who is comparable to an Associate Producer in a major Hollywood studio. He is responsible for all phases of production through the final acceptance screening. In starting his film, the Project Supervisor consults with a Technical Adviser, assigned by the naval activity requesting the film. They may call upon Training and Research Officers of the Training Film and Motion Picture Branch to assist in analyzing information on which the film will be based. For most training films, considerable research as well as interviews aboard ship and at naval stations are required before the necessary data are gathered.

Once the research is completed, the purpose, the objective and a brief of the film content are prepared as a Production Outline by the Project Supervisor.

The Production Outline becomes a basis for agreement between the naval activity requesting the picture and those responsible for its production. It stands as a blue print for a film—a point in production when basic concepts are frozen and the scope of the film limited.

Treatment Decided Early

An initial story conference is called to prepare the "production analysis" portion of the Production Outline. Taking part in the conference are the Project Supervisor, heads of the Story Development Group, Graphic Specialists, Writers and Project Officers for Production and for Training and Research.

Whether the film will be a factual how-to-do-it film, an operational type made under actual or simulated combat conditions, an indoctrinational type, or a mental conditioning or attitude creating type film, the group decided the method of presentation.

Agreement is reached as to the techniques to be used in the motion picture treatment: Live action photography, animation, cut-away models, off-stage commentary, dialogue, music, sound effects. The "production analysis" notes whether the film will be photographed in 16 or 35mm, black and white or color, its approximate length, the location of photography, who will supply the necessary material and personnel to be photographed, and finally the deadline for completion.

Writer and Artist Collaborate

The outline writer is selected from either the Navy's writing staff or from a commercial film company. First, in order to insure complete visualization of the subject in terms of pictures and not words, the writer and an artist collaborate in preparing an Action Outline or Treatment Synopsis.

The Action Outline contains artist's sketches or still photographs of the scenes in sequence, camera directions, and complete scene descriptions. But only the slightest indication of narration is included because, at this stage in production, thinking is confined to pictures. The Action Outline might well be likened to a script for a silent picture.

Oftentimes, sketches are mounted on wall panels in order that the picture continuity can be easily visualized. In this way sequences can be shifted, scenes dropped, or new ones added without losing the visual pattern of the film.

The original conference group again may be called to advise on the story treatment as it has been developed by the sketch artist and writer. After necessary scene changes and sketch alterations, the writer is ready to prepare the master script. Because there has been a careful, scene-by-scene analysis of the story and the visual techniques to be used, the writer need only add dialogue and commentary to complete the script.

The completed script, containing the story sketches, is submitted for final approval and checked for technical accuracy before photography is started by a Navy camera crew or by a commercial studio. [*Turn to page 109*]

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LOOKING BACKWARD IN VISUAL EDUCATION: A. D. 2000

by Clifford Dalton Ettinger, Lt., USNR

IN THIS present year of grace, 2000, all reputable historians divide the world into three periods, the first, before the printing press; the second from Gutenberg to Edison; and the third, after the motion picture and the slide film. It is, therefore, interesting to discover from old manuscripts that the ancients of 1945 were much agitated over a "visual education movement." That movement has long since died because of its success, and we moderns no more use the term "visual education" than early Americans used the term "textbook education." Since projected visual aids have been such an important part of our own education from elementary school through college, and since we make such extended use of our own personal collections and those of the public libraries, it is hard to realize that less than a century ago very few schools used motion pictures and slide films regularly.

Motion pictures and slide films had been used before World War II, but during the war their use had been greatly expanded by the Army and Navy. Civilian writers, of doubtful philosophical antecedents, after brief inspections of military training wrote accounts, bursting with praise and inaccuracies, of the effectiveness of projected visual aids. These accounts were widely circulated and debated, and although full of mis-statements, they rendered education a service because they publicized more efficient methods of instruction.

At the conclusion of the war much of the projection equipment and those visual aids suitable for civilian training were transferred to the schools. The school buildings of the 1940's were no more suited to visual instruction than our present communities are to electronic living. Finally, in 1950, a young architect of the functional school designed a building which made ample provision for visualization. One side of the building had no windows, all of the classrooms on this side were projection rooms, and their layout was determined by projection requirements. Each room accommodated forty students and was about one and one-half times as long as it was wide. The seats in these classrooms were placed according to the reflection characteristics of the screen even though this caused some space to be wasted. For the instructor, and to be used only in those rare instances when a student fell asleep in the dark, each chair was wired with a "hot-seat." Each student's desk had an individually controlled, shaded light permitting him to write or otherwise respond to the participation type of visual aid when the room was dark. These students' desk lights were arranged so as not to diminish screen brilliance. In the rear of the room was a permanent projection booth and a stand which accommodated various projectors: motion picture, slide films, lantern slide, three dimensional, opaque and others. Each stand had partitions for the convenient handling of reels, slides, filmstrips and records. The booth was soundproofed to keep the noise of projector operation out of the classroom. The plan was to leave the cheaper projectors in each room permanently and to bring in the more expensive ones for scheduled screenings. These older projectors were so large, heavy, noisy, inefficient, and encumbered with unnecessary gadgets that they bear but little resemblance to our own. For the first time provision was made in 1957 to gradually dim and brighten classroom lights as in commercial theaters.

An interesting innovation of 1962 was a scoreboard at the front of each room, electrically connected to each desk to permit the instantaneous scoring of objective type tests administered from the screen. These tests were used mainly for improving learning and teaching and only incidentally for grading. Each room was accoustically treated and the air conditioning system was powerful enough to insure comfort even in the hottest weather. At the front of each room was a permanent screen and a loudspeaker connected to a central public address system which could also be used to broadcast recordings and radio programs. In those days, though, the teacher did not have a local switch to control the bullhorn. By 1970 provision had also been made for projection in domestic science rooms, science laboratories, gyms, shops, typewriting rooms and even in the cafeteria. To replace the conventional bulletin board, rear projection machines were placed in the walls so that the screen was flush with the surface of the wall. Excellent student work was photographed in color on 2x2 slides and the slides automatically changed every few seconds with a complete change of the display every few days.

A school building functionalized for teaching with projected pictures required other architectural changes. A storage room was provided on each floor with special racks and bins for motion picture reels, for slide films, for recordings, for lantern slides, for opaque materials and three-dimensional slides and for projectors and screens. A space for splicing and other simple repairs was provided together with the simple equipment needed for mailing and receiving materials. A small projection room to seat about ten people was provided on each floor exclusively for faculty use in previewing and selecting films. Although the public did not then borrow visual materials from libraries as we now do, the architect had the foresight to provide what was then a new type of school library which had storage facilities like those already described. There, [*Turn to page 117*]

On Screen—Official U. S. Navy Photo

MOVIES SHOW THEM HOW TO CARE FOR THE WOUNDED

IN THE NAVY, as in all the armed forces, training films covering many subjects help to make the right way practically second nature. Films on the care of the wounded, for example, have helped to save many lives, to restore men to active duty in record time.

And the "know-how," taught by these movies, is matched by the professional touch so evident in the pictures themselves. Men from all branches of the industry have joined forces in this important work. Behind the scenes, the laboratory technicians—processing, editing, adding supplementary sound—contribute much to the effectiveness of the finished productions.

Shoulder to shoulder with reconnaissance and combat photography, training films have played a large part in the successful prosecution of the war.

Eastman Kodak Company, Rochester 4, N. Y.

J. E. BRULATOUR, INC., *Distributors*
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One of a series of advertisements by KODAK testifying to the achievements of the movies at war.

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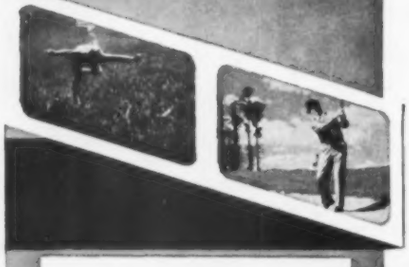

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Name bands and topflight performers! 18 new attractions!

MUSICAL MINIATURES (16MM, 100 FEET)

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JOHNNY LONG — LARRY CLINTON — LANI McINTYRE
EMERSON MOUNTAINEERS — AL DONOHUE — ART DIXON

. . . and others are here to entertain you.

New thrills for sports fans!

SPORTS (8MM and 16MM, SILENT OR SOUND)

BIT AND BRIDLE	Hoofbeats echo through the quiet byways of Aiken, South Carolina, where the finest thoroughbreds in the world are trained. The horse lover will find steeplechasers, trotters, pacers, hunters—to remind him of the good old days when tracks were open.
UNDERWATER	Heralded as the most exciting underwater scenes ever filmed! A captivating camera record of two great water sports—water polo and goggle fishing. A lesson in sports plus fascinating entertainment makes this *Pictorial* achievement a two-in-one combination.
SMOOTH APPROACH	Four crack golfers demonstrate the fine points of the game — Horton Smith, Jimmy Thompson, Ed Dudley and Dick Metz. It's a cinematic dream for golfers . . . with slow-motion highlights.

PRICES 16mm, Sound . . . . $17.50 — 16mm, Sound (100 ft.) . $7.50
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Hundreds of industrial plants and business organizations are showing PICTOREELS as a recreational divertisement. These gay and tuneful productions give a "lift" to workers during the course of a busy day, and have aided substantially in keeping "the goods" moving at a steady pace. Note the happy reaction as you show PICTOREELS to your own crew.

PICTORIAL FILMS, Inc.

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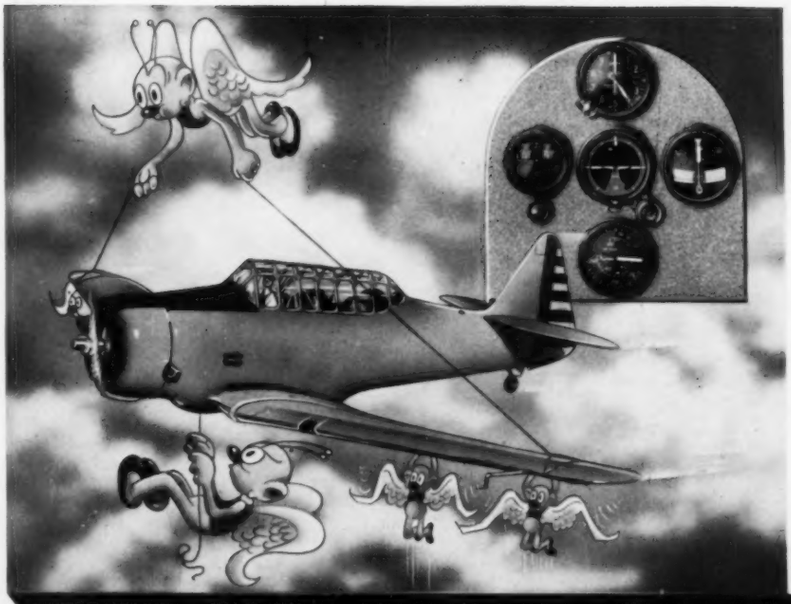

N's Roger Wilco A's Lift The Beam On-course

Navy pilots — in the air and everywhere — owe much of their fine technical skill to the Navy's well planned program of visual training aids. We're proud we at Ray-Bell Films were selected to develop and produce a number of these training aids for the Bureau of Aeronautics. Scores of motion pictures and sound slide films have been made for them in our studios — and our part of the program has been in the most specialized division . . . Instrument Flight Training, advanced and technically complex. Yes, we're still doing Navy and government production — but at the same time our knowledge and craftsmanship are available for your motion picture problem, too.

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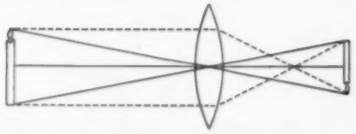
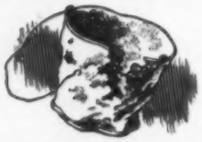
WHY DO WE "SWAT THAT FLY"?



WHY DO LENSES REFRACT LIGHT?



WHY DOES IRON RUST?

WHY DOES BREAD GET MOLDY?

SHOW THEM WHY!

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Perfectly simple questions? Yes! Everybody knows the answers! But do they? Do your employees know the why and wherefore of the work they are doing? Do they understand nature's forces which have been harnessed by industry and agriculture, nature's laws which must be obeyed? Do they understand the basic principles which lie behind their everyday jobs?

Many firms are now using Encyclopaedia Britannica Films to explain to their own people the fundamental principles underlying the firm's activities, principles which these films present quickly, dynamically and authoritatively, with *more* knowledge retained for *longer* periods of time.

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***Silent; others sound**

Complete catalogs of almost 500 films, both sound and silent, are yours for the asking. Fill out and mail the coupon today.

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THE STORY OF NAVY TRAINING FILMS:

(Continued from page 32)

pictures received were screened, and reported in written reviews; in fact 925 screenings were held.

The subject matter of the films covers the vast range of war equipment and tactics, and war problems of every type—obvious and obscure. Of special interest are the subjects translated into Chinese, Spanish, and Portuguese, furnished by the U. S. War Department.

Besides the subjects supplied to the United Nations Central Training Film Committee by the Armed Services of the United States, there were hundreds of subjects supplied by the British Commonwealth. Over 776 subjects came from the British Army and the RAF. On the basis of plans being made by the United Nations Central Training Film Committee, the coming year promises to be one of expansion, with more United Nations becoming active participants in the Committee and with closer relationships being established. The possibilities of this cooperative effort for the exchange of training film information and training films are left to your imagination.

Victory Is the Goal

To a degree, the three aspects of the Training Film and Motion Picture Branch job—intra-Navy, inter-U. S. Armed Services, and inter-United Nations—are closely aligned. However, to a larger degree, each aspect involves special problems in planning, procurement, and distribution which must be met with unique, yet convergent methods. The total job must be done with one objective in mind at all times. In spite of the complexities of the job and the pressures of this or that group with singular enthusiasms, one purpose must be foremost: the planning, production, and distribution of training films and all the rest of the related work carried on by the Armed Services must be for the purpose of training personnel in the ways of warfare to bring about victory with a minimum of losses in the shortest time possible.

FILM PROCUREMENT

(Continued from page 37)

Section maintain personal contact with producers by periodic visits to their places of business. Experience has proved that by meeting the producer on his "home grounds" it is much easier to become acquainted with his problems. It is realized that only when producers' problems are ironed out can the utmost efficiency be expected. These visits also enable the officers to familiarize themselves with the producers' facilities and methods of operation.

To facilitate contact with producers located on the West Coast, the Procurement Section has two officer representatives attached to the United States Naval Photographic Services Depot in Hollywood. All negotiations

and other details involving the procurement of training films and motion pictures on the West Coast are handled by these officers, and the details and recommendations are forwarded to the Training Film & Motion Picture Branch in Washington for final action. The presence of these representatives on the West Coast reduces materially the disadvantages arising from being separated from certain producers by the width of the continent.

32,000 Miles of Prints

Although this article is devoted mainly to a discussion of that phase of the Procurement Section's activities which relate to the procurement of training film *productions,* it would not be complete without some mention of its activities pertaining to the purchase of materials and services for the making of release prints. As a matter of fact, the amount of money spent for release prints is not much less than the expenditure for productions. Almost half of the personnel of the section devote their time to the purchase of prints, and the details and problems involved are multitudinous. To give some idea of the magnitude of this particular activity, the total length of release prints purchased in the last twelve months alone approximated 32,000 miles—enough to encircle the globe approximately $1\frac{1}{3}$ times and enough to keep a single projector running 24 hours a day every day in the year for approximately $8\frac{1}{2}$ years!

Time & Quality Essential

Within limits of this article, it is not possible to cover the many other duties which constitute the entire work of the Procurement Section, such as, approving invoices for payment, maintaining adequate supplies of raw film stock, allocating raw film stock to producers, preparing the annual budget of the Training Film and Motion Picture Branch, liaison with other Army and Navy activities, maintaining numerous records, and constantly reviewing procurement procedures for continued effectiveness.

Although the Procurement Section attempts to purchase articles and services as reasonably as possible, it considers the quality and time elements as being of prime importance. Procurement-wise, that is believed to be wise procurement.

* * *

★"In millions of American homes there is hunger for a sight of a son or a father or a husband. Americans have the power to hasten their homecoming. A mighty upsurge of Seventh War Loan bond-buying will shorten our ordeal."

—Gen. George C. Marshall

When a camera is mightier than a gun!

BEFORE the gun goes into action, the gun crew needs know-how — and the more know-how the better.

It's our job to help the Navy put hard-won knowledge and experience in effective training film form — to give the fighting man all we can of what he needs to know — and give it to him with visual clarity, in words he can understand, in a way that'll stick.

To that end, we have gladly accepted our assignments and honestly devoted our efforts. We are happy to have had a real chance to work with the Training Film Branch, and we frankly admit that the basic merit of Navy training films results from their work, and their cooperation.

In addition to many gunnery subjects, our Navy productions include films in the following fields:

- Aircraft Maintenance
- Aircraft Recognition
- Combat Reports
- Concrete Engineering
- Dentistry
- Medicine
- Physical Education
- Rescue Techniques
- Welding

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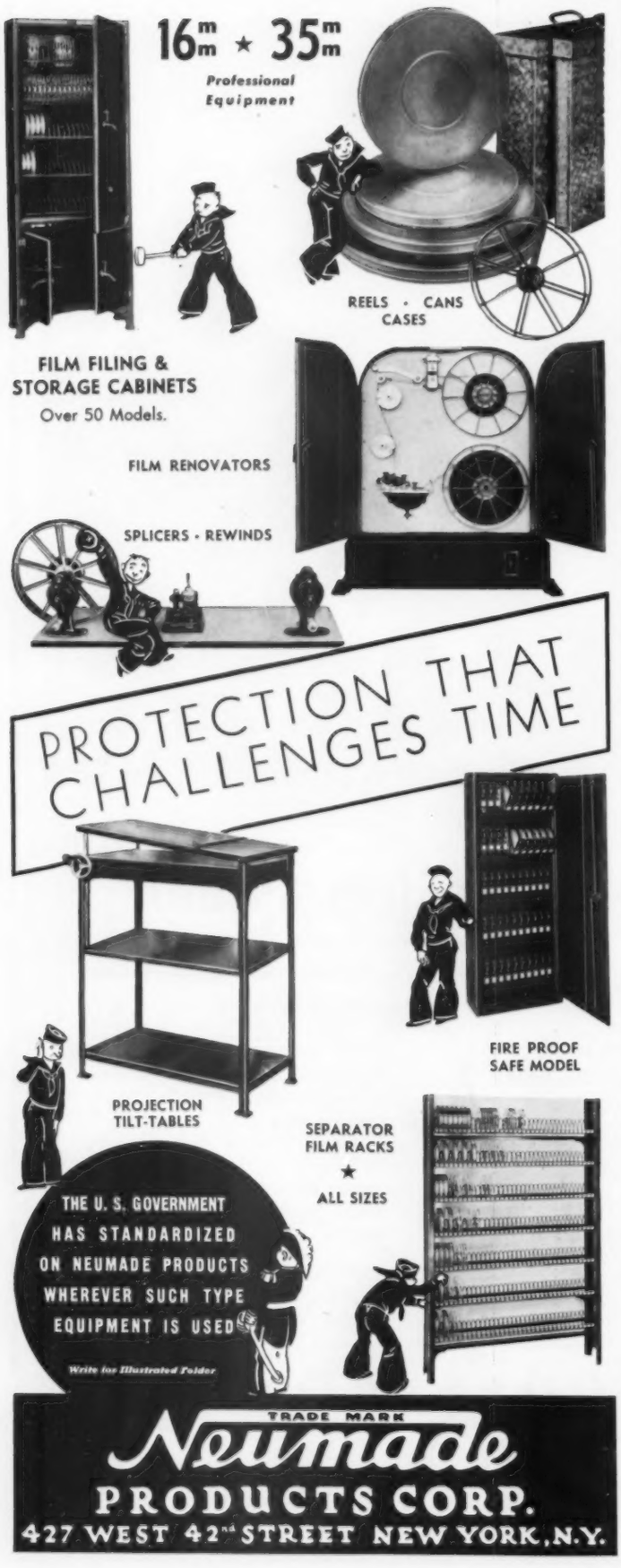

PICTURES ARE BULLETS

(Continued from page 73)

that shooting a picture is only half the battle. Getting prints the way the Navy wants them—clean, sharp, with brilliant whites, rich blacks, and a full scale of tones in between—requires time and patience. The lab man has full share in the victory.

MODELS

★ I have yet to find an embryonic movie star who can look as much at home behind a lathe as the person whose everyday job is behind that lathe. So, when staging a scene for a film strip, it's a good idea to make use of the actual operator of a machine, unless the picture requires special dramatic talent.

But posing everyday people is not easy. Most "ordinary citizens" become self-conscious before a camera. As an antidote, let them work for a while at whatever they're doing. Then shoot the picture when they're concentrating strictly on the job rather than on the camera. Here flash is perfect because exposures are short. The amateur model doesn't have to "hold that pose."

The model's clothing can strongly affect a photograph. Loud patterns or a brilliant white on the model attracts the eye and detracts from the real focal point of the picture. A good general rule is to have clothing neutral in tone and pattern.

Even more important, make sure no one gawks at the camera. That's the quickest way to ruin a picture's authenticity. Distracting clothing might be touched up satisfactorily on the frame card, but a static pose or gaping face is on the emulsion to stay.

CAMERA ANGLE

★ Where should the camera be placed? No generalizations should be made here, as too many factors are involved. A camera is good when it stresses the required point and subordinates everything else. Sometimes a high angle is best; sometimes a low. It's dangerous to over-dramatize down-to-earth technical subjects with camera angles, so that there is no resemblance to the objects as normally seen by the human eye. Worm's eye views and other tricky angles make unusual patterns, but they don't necessarily *teach*.

BACKGROUNDS

★ Background is part of the camera angle problem. Backgrounds are easily controlled during shooting, but a devil of a job to correct once the picture is taken. The illustration shown here is an extreme case, but many of the stills made for our slide films show almost as little thought. If the photographer had taken the trouble to rig up some sort of screen to cut out the confusing background, he could have saved a couple of days of skilled retouching labor. Cloth, plywood, beaver board, or any other similar material could have been utilized for the screen. A single piece for the whole area wouldn't have been necessary. Any joints in the material are simple to touch out. In fact, had the photographer found enough material to blot out only half the background, he would have saved a lot of retouching time.

Background problems for smaller portable objects are simpler. They can usually be moved away from their backgrounds along with the lights, as suggested before. Or, if there's a plain wall in the vicinity, they may be moved in front of that. Actually, the smart photographer prefers going out on assignments with at least enough black, white, and grey cloth to back up small objects. The people concerned with the film should make every effort to check beforehand whether the photographer requires much background material.

Weigh the time in shooting against the time lost for retouching, in considering the elimination of backgrounds—usually you'll find it pays to spend a little extra time in the shooting.

The simplest, safest backdrop outdoors is sky, which Mother Nature has been extremely generous in providing everywhere. All sorts of trouble can be avoided with a low camera angle to give a sky background. And speaking of skies, the few extra seconds and slight effort it takes to put a filter over the lens proves very worthwhile. There are an inexcusably high number of washed-out unnatural-looking skies in film strips.

CROPPING

★ Cropping is one operation that can be done just as well at the frame card stage as in shooting. Because of the time element or inadequate equipment, the photographer sometimes has to include excess material on his negative. As long as the negative is sharp and reasonably fine-grained, a blow-up of the important section can be made with very little loss of quality.

In fact, if there's any doubt about how much to include when shooting the picture, the photographer should take in a little more. The shot can be cropped, but it's mighty tough to add more than you have in the negative. Remember, however, that the experienced photographer gets the photo with the most punch by showing only the "meat" of the subject. Eliminate all else.

These, then, are a few of the basic problems of slide film photography. Know them. Know them well enough to be sensibly critical of your photographer's work.

In wartime, good still photographs used in Navy Training Films transcend their usual value. For these pictures must teach—they must instruct quickly, to supplement experience in the utilization of weapons and equipment. If that teaching is effective, it can weigh the scales toward life, not death, in a split second of battle.

Yes, cameras *can* be effective guns—*if you make every shot count!*

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Buy an *extra* bond this week; bring your V-J message direct to Tokyo!

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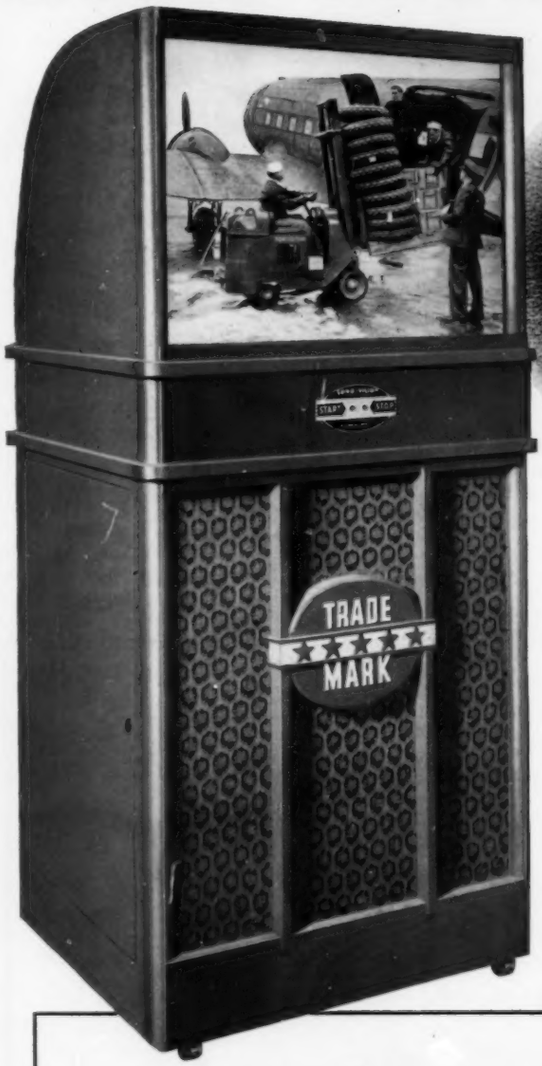

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MILLS INDUSTRIES, INCORPORATED

4100 FULLERTON AVENUE, CHICAGO 39, ILLINOIS

TRAINING FILMS IN A TRAINING PROGRAM

(Continued from page 43)

and keys in the training films found by actual experience to be the most useful aid. Each film is evaluated briefly and suggestions offered on how it may be used to best advantage.

"More Learning in Less Time" is a booklet prepared by the Training Aids Division to give Navy instructors a better over-all understanding of training films and related aids. In approximately thirty well-illustrated pages, it presents concise and interesting factual data and advice on such topics as: Film Types and Uses, How to Use Training Films, Desirable Room Conditions, Technical Tips on Projection, and others. This booklet has been of great value in performing "missionary" work for Training Aids Officers, permitting them to devote more of their time to the individual problems of training officers and instructors.

Virtually all materials produced by the Training Aids Division to improve distribution and utilizaton of training films are direct outgrowths of field experience. They solve problems actually encountered. The solutions they present are in great measure solutions worked out by Training Aids Officers themselves. They are the fruits of evaluation and field coordination,

of keeping in touch with Training Aids Officers by direct contact and through periodic reports, of knowing what problems have developed here, and what solutions have been found workable there.

"Training Aids in a Training Plan Aboard Ship," just distributed directly to all ships, is a publication that serves well to illustrate this relationship between the Training Aids Division and its field agencies.

Designed especially for forces afloat, it is largely the work of Training Aids Officers, and represents a system developed and tried out with great success on representative ships. It embodies a complete plan for shipboard training, making maximum use of training aids. Included are suggestions on how to organize training classes, how to use training aids, and how to keep records. Included also are suggested outlines for departmental training.

With each outline are suggested topics to be discussed; films, slide films, study guides, charts and other aids to be used; and suggested contents of training periods. The booklet is thoroughly visualized with excellent drawings and flow charts. It is expected to be of great assistance to the busy fighting ships of this war who often find themselves with little time to organize and carry out an underway training program. Lacking such organization, training films cannot achieve maximum usefulness.

Keeping Films on the Job

No ship or shore training activity is ever completely "serviced" so far as Training Aids Officers are concerned. By the time a ship has completed its shakedown cruise and sets off to do battle, the training film situation is pretty well in hand. When, a few weeks or months later, it reaches an overseas port or returns home, things have invariably been changed. New personnel have come aboard. New fighting or navigational techniques have been developed, and new training films produced concerning them. Certain films are no longer needed. A projector has broken down and needs repairs. Further advice is sought on the techniques of teaching with films, or perhaps some assistance with film

(Continued on page 90)

WE CONGRATULATE . . .

THE TRAINING FILM AND MOTION PICTURE BRANCH of the Bureau of Aeronautics, United States Navy, for their training films program, and . . . .

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to have been able to contribute our production facilities to this program

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ILLUSTRAVOX is the scientific training method . . . a portable, inexpensive sound slidefilm projector uses records and slidefilm to present your exact and perfected training message . . . in attention-arresting pictures and spoken words.

★ ★ *Illustravox is the one best way to explain your story to the men on the production or sales front. Plan now to train workmen, veterans and salesmen for production and selling jobs the Illustravox way.*

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Increased production . . . this scientific training method expands your output quickly.

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TRAINING FILMS IN A TRAINING PROGRAM

(Continued from page 88)

stowage. The same situation, in general, holds true with shore training activities.

A Continuous Process. Keeping training films on the job is therefore a continuous process the basic purpose of which is to improve instruction. It requires the establishment of Training Aids Sections and Libraries in strategic spots all over the world. It keeps Training Aids Officers continually on the move, catching ships wherever they can find them, and giving them as much help as possible in the time available. It sends these officers on a continual round of visits to shore training centers where they never quite catch up with all the work that needs doing.

Coordination of effort among the widely scattered Sections and Libraries and among the equally dispersed Training Aids Officers is most essential. It is a comparatively simple task within a naval district. Between district and district, and between district and overseas operational area, it is another matter entirely. To maintain any continuity at all in serving a ship, a Training Aids Officer must know what his fellow officers have done.

The "Training Film Log" has been developed to help meet this need. The Logs are composed of a set of inventory sheets with columns for recording use of films by month. They are divided by departments; departments are subdivided into "motion pictures" and "film strips." Space is also provided for additional data.

The Logs serve three major purposes: (1) to provide ships' training officers with a complete inventory of training films aboard and a record of the use made of them; (2) to supply Training Aids Officers with information needed to service ships; and (3) to furnish information useful to the Bureau of Navy Personnel in its training aids program for forces afloat.

Since the films are arranged by departments, the officers in each can see at a glance the motion pictures and film strips available. The Log also shows which departments are most active in the use of training films, and which films are used most frequently, thus assisting Training Aids Officers in suggesting the addition of new films and the removal of films no longer needed.

Training Aids Guides are also keyed into the Logs, with the symbol (G) after each film title on which there is a guide aboard. Training Aids Officers may easily bring the list up to date.

Evaluation is the procedure by which the training aids program as a whole is continually coordinated and up-graded. It is a process of continually seeking and finding information on which films and projectors have been used and which have not, where they have been used and where they have not. It is a steady search for new ideas on film production, on distribution, and on utilization. It is a constant endeavor to improve film-instructor performance through a thorough knowledge of current practice.

Comprehensive bi-monthly reports from Training Aids Sections and Libraries furnish much of the data for evaluation. These are supplemented by informal reports from Training Aids Officers, field visits by evaluation experts, and special questionaires sent out by the Division's evaluation staff.

Evaluation, incidentally, is the responsibility not only of experts but of all Training Aids Officers and of instructors. Throughout the training film cycle, all hands are advised and encouraged to maintain an attitude of critical analysis toward films and toward the utilization of films, and to funnel into appropriate channels all significant findings.

Re-distribution of films, a major development of the Navy training film program, depends on such evaluation. Instructors and training officers cooperate with training aids officers in making regular checks on film performance at various activities. Films no longer used in one location are returned to the Training Aids Section and re-circulated to other activities. Films no longer required within one Section's area of service are reported to the Production and Distribution Section where forwarding to other districts is directed.

Approximately twenty million feet of training films have so far been shifted directly from areas where their purpose has been served to other areas where they were needed. This procedure results in faster service and a great saving of funds. It represents also a significant effort on the part of the Navy to avoid the waste of precious film stocks.

Retiring the Training Film

Obsolescence of training films is a substantial problem in the Navy, due to the advances and changes so characteristic of war, and to the great number of films involved. At the present time, films are declared obsolete and removed from circulation as technical inaccuracies are disclosed or new doctrines develop. Some films become obsolete automatically as new films are produced. Disposition of these is no problem. The status of others is judged from the reports of instructors and Training Aids Officers based on actual film performance in specific situations. Bi-Monthly usage reports are another indication of possible obsolescence.

Films obviously not in demand are systematically re-examined. If these films should be withdrawn from circulation, a recommendation to that effect is forwarded to the cognizant authority.

Films Are Big Business

Statistics submitted by a typical Training Aids Section in a report of its activities for the past year give impressive evidence, from at least the

(Continued on page 92)

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Army and Navy specialists know the importance of *Sound Slide Film* equipment in training large groups of new men ... they found that trainees learn twice as fast when they *see* and *hear* their lessons! Operadio is proud of the quality and dependability of its equipment used in this program. Right now, Operadio's facilities are employed in producing varied acoustic and electronic equipment for the Armed Forces. Operadio, a seasoned manufacturer of *Sound Slide Film* units before the war, will offer new and improved equipment designed to meet post-war needs for low-cost, streamlined training.

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SYMBOL OF ELECTRONIC ⚜ EXCELLENCE SINCE 1922

TRAINING FILMS IN A TRAINING PROGRAM

(Continued from page 90)

quantitative standpoint, of services rendered. They indicate what is being done along the same lines throughout the world.

Quoting from the report:

During the year 1944, 973 ships were serviced and re-serviced at the Training Aids Section; and 665 ships were serviced and re-serviced at the Training Aids Sub-Section, making a grand total of 1638 ships serviced during 1944.

During the year, an average of 93 Naval training schools and shore stations were serviced monthly by the Training Aids Section; and 45 Naval training schools and shore stations were serviced by the Sub-Section.

Total film turnover for the year was 62,186 prints; roughly divided, one-third by the Training Aids Sub-Section, two-thirds by the Training Aids Section.

During the year, the repair department of the Training Aids Section serviced 326 projectors; the Sub-Section serviced 188 projectors, making a district total of 514. The Section and Sub-Section trained 470 projectionists in the job of projecting motion picture training films and doing minor service work on the machines.

The Navy Training film program is indeed big business. Last year, it resulted in the production of 213,535 prints of Navy motion picture films, as distinguished from the thousands procured from other sources. So far, 10,000 motion picture projectors have been required to keep this enormous film footage in action. The Navy also produced 361,553 prints of 35mm. film strips. Approximately ten per cent of this total film production has been in color.

The Navy has, in fact, produced and distributed more educational motion pictures since the beginning of this war than the entire previous production of educational motion pictures since the invention of the modern sound motion picture.

The Real Significance

The real significance of this program is not, however, a matter merely of size. In the Navy, and in our other armed services, all available technical resources have for the first time been applied to implementing courses of study with training films. Never before has so much concentrated effort been devoted to the production of specific training films to meet specific subject requirements. Never have the problem of effective film production, distribution, utilization, and evaluation been of such paramount importance, nor the efforts to solve them so intense. Never—and this is the significant point—have so many men been trained so fast and so well in the ways of war as they have since the training film was given a large part of the job to do.

Future Holds Promise

Unquestionably, postwar education will profit from wartime experience with training films. Techniques have been tried and proved. Equipment has been developed. Manufacturers have written off the costs of research and initial production, and are ready to meet the needs of schools on a scale hitherto undreamed.

Under a program of forced development, the training film has come of age. When war has ended, it will be ready to realize its great potentialities in educating Americans for a better life.

ON NAVAL AVIATION

(Continued from page 59)

velopment which deserves specific comment is a series of films written up more in detail elsewhere in this issue, on "Simulated Combat Missions"—a new type of problem solving film developed by NAOTC originally for its navigation training program. Actual combat mission problems in navigation, communications, and recognition are presented to the class for solution during the "stop and go" showing of the film. Based on that technique, another series has been launched on "Combat Airmanship" which includes for solution *all* phases of a combat mission,—navigation, communication, recognition, aerology, gunnery,—the score of aspects of training which have to be integrated into the successful completion of a combat mission. This, too, makes a fundamental contribution to civilian as well as military training—not in *content* as the flight training pictures do,—but in *method*. The problem of presenting situations to students which demand non-artificial integration of learnings has staggered the genius of teachers of all levels of the school everywhere. Naval Aviation believes it has contributed vitally to the solution of this problem in this type of film.

Fleet Air Requests

But mainly, requests for new film production now come from training officers of Fleet Air Commands, and from technical and training desks in the Aviation Training Division under the Deputy Chief of Navy Operations (Air), in the Bureau of Aeronautics, in the Bureau of Ordnance, and in the Readiness Division of the Commander in Chief's Office. These films are subjects of operational nature, new equipment and new tactics. The number of films being produced for Naval Aviation is greatly reduced, but their critical importance is great. And key training and technical personnel in Naval Aviation continue to rely heavily on audio-visual aids to speed and standardize their instructional programs in schools and air stations under their direction all over the continental United States, in advanced bases throughout the world, and wherever carriers are afloat.

* * *

Get and read your copy of BUSINESS SCREEN regularly. Annual subscription: $2.00 for eight complete numbers; foreign $3.00.

IT'S PEOPLE WHO MAKE PICTURES

These are the members of our staff. Their effort, their talent, their pride of craftsmanship have made our production of United States Navy training films possible. To them belongs the credit for a job well done.

PRODUCTION

Sydell Achs
Istar Barzel
Ruth H. Baxenden
Frances M. Buss
Jean C. R. Campbell
Joe A. Cross
Edna V. Day
Lee B. Dick
Ben E. Dyer
Norman G. Dyhrenfurth
Carl B. Freybe
Joseph C. Gonzalez
John R. Gregory
Carol L. Hale
Ferle H. Hoffman
Hermon Holt, III
John J. Kannar
Doris Kirkland
Frank Landi
Joan E. Merriss
Henry L. Miller
John Mills, Jr.
Henry M. Moll
William M. Nelson
Charles H. Rylander
Carolyn L. Smith
William O. Steiner
Howard F. Stiles
Virgil L. Stockton
William D. Stoneback
Warren Sturgis
Harold Walker
Alice E. Welty
Sara S. Westermann
Tamara Zmitrovitch

ANIMATION

Joseph P. Armstrong
Paul A. D. Busch
Theresa Farrone
Lillian D. Ferdinand
Marie T. Gamsu
C. Dwinell Grant
Alfred H. Hughes
John H. MacNamee
Peggy Monnot
Dolores Pittaro
Ernest M. Pittaro
Ruth Scheinwald
Christine Schellenbach
Mary P. Willard

GENERAL OFFICE

Jane D. R. Beach
Kathryn Beaton
Michelina Buoncore
Virginia M. Burgert
Robert M. Campbell
Madge C. Cavenaugh
Sterry H. Childs
Essye Engle
Conrad F. Estwick
Ellen G. Fetyko
Anne E. Gallagher
Mary W. Hartwell
Jeanne M. Loftus
Marie P. Montera
Margaret J. Ralston
Anne K. Skidmore
Ellen R. Sonkin
Rose Sottile
Kinzer G. Stockton
Muriel S. Thompson
Charles S. Truhan
Joy Woody
Charles E. Wright
Rosemarie Youngblood

Space limitation prevents our listing the more than two hundred members of the Screen Actors' Guild, and of Local 644, Local 161, and Local 52 of IATSE, who have played an equally important part in our Navy training film production.

WILLARD PICTURES

Thomas W. Willard **Theodore H. Westermann** **Arthur L. Gale**

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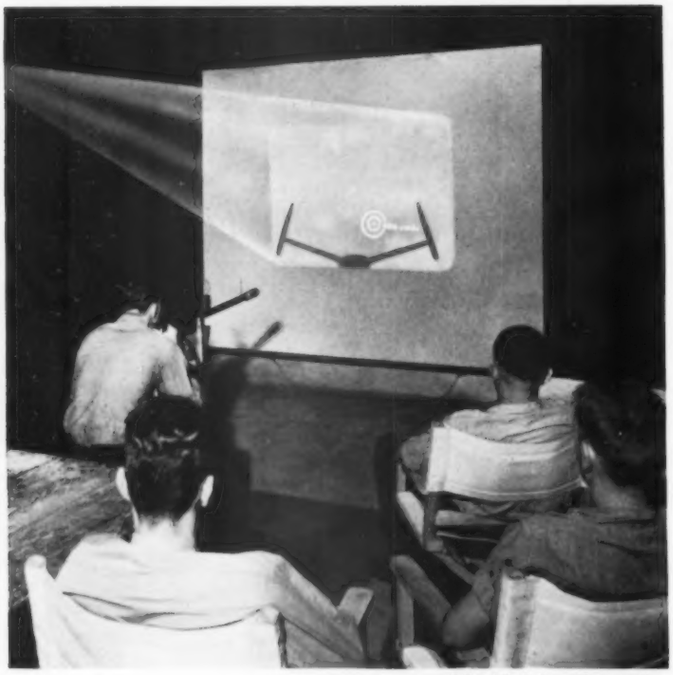

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Many types and sizes of Da-Lite Screens are used in the numerous and highly diversified visual training programs of the United States Navy. The high quality of Da-Lite fabrics and screen surfaces assures *brilliant* and *sharply defined pictures*, so essential to fast and thorough learning. Da-Lite mountings combine simplicity and convenience with amazing durability. Styles for all requirements include frame-type screens, spring-operated hanging screens and the famous Da-Lite Challenger tripod model. Write for catalog and a complimentary copy of "More Learning in Less Time"—the U. S. Navy's interesting manual on how to use visual aids.

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SCREENS

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From the Islands to the Photo Science Lab

(Continued from page 47)

On this stage PSL's Sound Section can record, in 16 mm. or 35 mm. "live dialog" (simultaneously, as the actors speak the lines) or narration to picture, along with acetate disks for immediate playbacks. Two sound trucks and portable equipment for all location recording jobs, land or sea, enable PSL upon occasion to obtain complete coverage of on-the-spot Naval events.

Equipment Is Repaired

The Laboratory's Motion Picture Photography Section supplies and keeps in repair the 35 mm. and 16 mm. movie cameras used for all PSL training films. Black and white pictures are more frequently produced, but color photography is coming more and more into demand and PSL is turning it out consistently. Studio sound cameras, single system sound cameras, and high speed time-study cameras operating at 3,000 frames per second are only a part of the Motion Picture Photography Section's contribution to production. The section also furnishes all cameramen, grips, gaffers, juicers, property men, set-carpenters and make-up artists.

If the film calls for a skilled interpretation of its subject by professional actors, the director simply puts in his request to a casting committee of officers from the Writers and Directors Section, which operates a sub-section composed entirely of former professional actors recruited for the express purpose of acting in Navy training films. Among this group will be found Hollywood and New York stars, featured and bit players, a few of whom drew down pre-war weekly salaries as high as $5,000.00 per week. The Navy receives the benefit of their experience and skill for whatever pay their military ratings call for, which, so far, has averaged around $56.00 a month. If Rita Hayworth, Lana Turner and Madeleine Carroll are wondering what has become of some of their leading men they might be able to discover their present whereabouts if they were allowed to view a various assortment of Navy training films. In the case of acting types not to be found in the Navy, such as matrons, juveniles, grandfathers, etc., PSL employs professionals from stage and radio. The acting assignments call for everything except—as viewers of Navy training films will tell you—those emotions entailed in the Boy-Meets-Girl motif.

Producing on Location

On major location productions PSL crews have at one time or another built a complete native village well stocked with dusky inhabitants; reproduced an entire jungle combat area replete with zooming, strafing planes and crashing palm trees; constructed and "bombed" an operating "Japanese" air strip; set up a million dollars worth of highly technical Navy equipment and made it work; maintained an under-water shooting schedule of sixty consecutive days, involving an acting and photographic crew of seventy men and WAVES. PSL production units have operated within the continent at locations as widely divergent as the Bay of Fundy, Nova Scotia; Seattle, Washington; Ocala, Florida; Galveston, Texas; and Panama, C. Z.

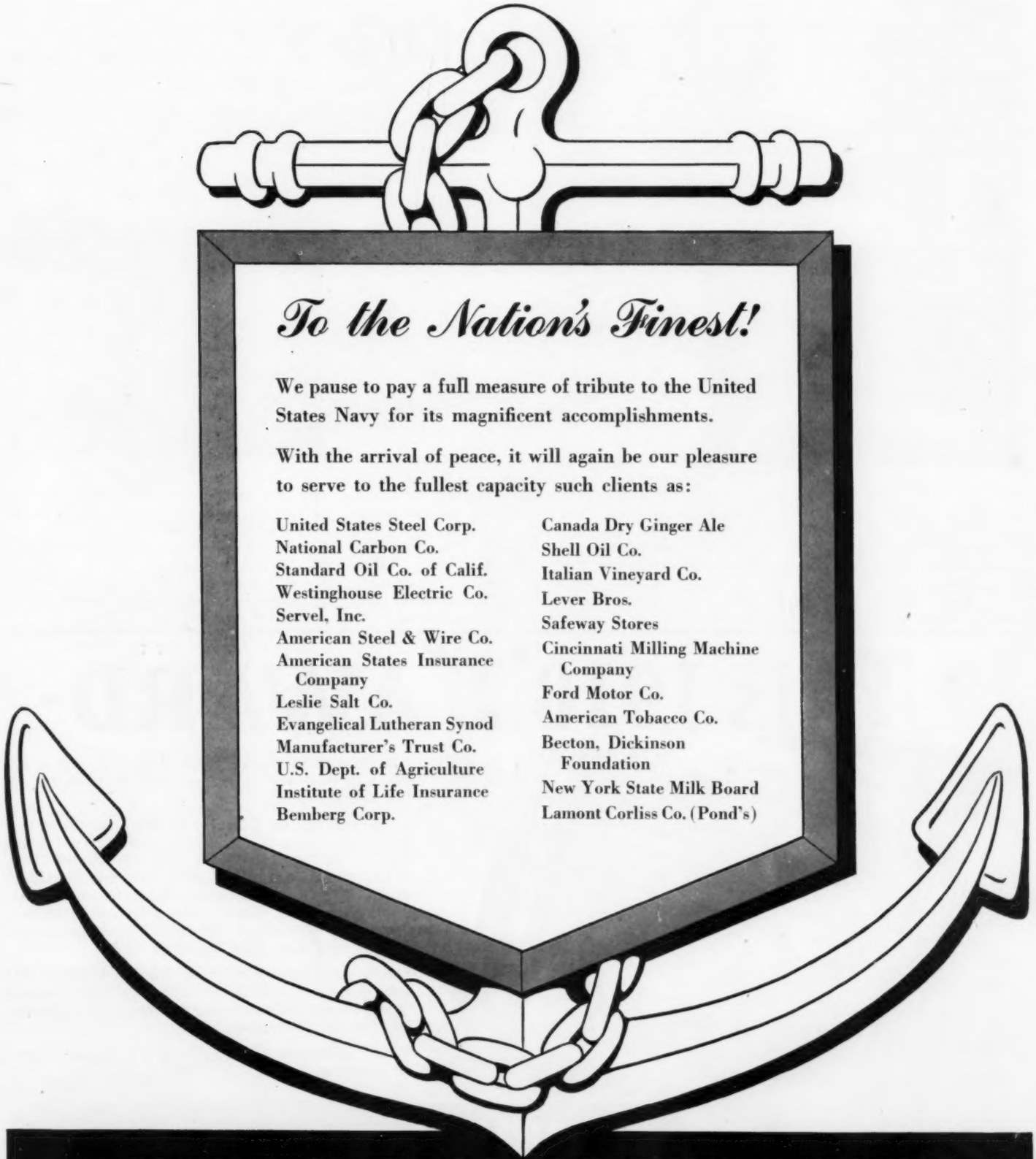
Once the exposed negative from any of these locales is in the can, it is forwarded immediately to PSL and turned over to the Lab's amazing Processing Section, which develops and prints all 16 and 35 mm. film. In the case of sound film, either variable area or variable density track can be processed.

From Processing, the film is turned over to the Editorial Section which will handle it from here until the final composite print is viewed for acceptance by the requesting authority and members of the Training Film and Motion Picture Branch who assigned the producing of the picture to PSL. The film passes through approximately twenty stages while under the supervision of the Editorial Section. Some of the more important stages are: the job of wading through all negative and rough-cutting it for a work print; cutting the dialog track to match the print; making many of the needed optical effects such as *fades, wipes, dissolves;* adding appropriate musical and sound effects; and cutting negative to match the approved work print.

A Guaranteed Audience

Yes, PSL has cut quite a niche for itself in the Navy, and is daily proving why the motion picture—a comparatively new feature in the Service—is here to stay. Civilians as well as Navy men will be ably instructed by these training films for years to come; and invaluable Naval battle records will be preserved in celluloid for all time. PSL has, in a course of three years, assumed the proportion of a major studio. There is, in fact, only one function of a Hollywood studio with which PSL cannot compete: the *Premiere*. The gala initial showing of a completed training film is likely to be held in a New Guinea jungle, or inside the mess hall of a boot training camp in Michigan, or aboard a destroyer spooning through the Mediterranean.

But PSL combats this lack of *occasion gaudé* by going Hollywood one better in a far more important respect: its films never lack an audience. The audience is an item the U. S. Navy *guarantees.*



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We pause to pay a full measure of tribute to the United States Navy for its magnificent accomplishments.

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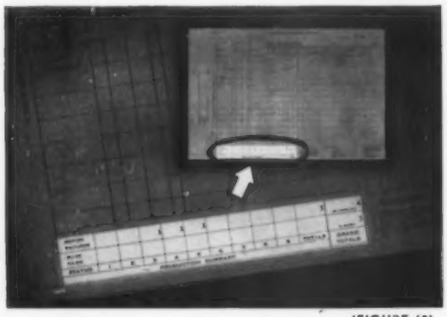
OFFICES
8627 Sunset Blvd., Hollywood 46, Calif.

KEEPING TAB: *(Continued from page 68)*

tion will be explained by a code figure appearing in the column headed "Supplementary Notes." For instance, if the figure "81" had been inserted in this column, it would have indicated that bad weather was causing the delay. Detailed information concerning the background of the delay must be submitted on a separate report sheet for filing with the permanent case history of the film.

In FIGURE 10 may be seen that feature of the Training Film Status Report which permits a quick analysis of the status of any group of



(FIGURE 10)

films. Tabulations are made automatically during printing and show, in this case, that Lieutenant Taylor has one motion picture in each of the three production stages identified as 3, 4 and 5. In the "Totals" columns, it shows that he has 3 motion pictures and no slide films in work. This is further totaled in the "Grand Totals" column to show that he has 4 films assigned to him for production but that only 3 are in work. This summary becomes much more significant where larger lists of films are involved, as is usually the case. Furthermore, it is not limited just to the activity of the supervisor. For instance, a bi-weekly list is prepared grouping all films according to producer. Thus, a tabulation is available regarding the state of each producer's work load for the Navy.

Paralleling any system for record keeping must be a smooth-working plan for keeping those records up to date. To this end, a check-off list shown in FIGURE 11 has been furnished each project supervisor. Since he is the one responsible for the progress of all films assigned to him, it is his responsibility to see that records concerning his films are brought up to date twice each month. On the 1st and 20th of the month, he receives two copies of a Training Film Status Report sheet listing all films for which he is responsible. He immediately:

1. Verifies the accuracy of data listed about each of his films.
2. Enters a status code figure in the space reserved for the current reporting period for each film.
3. Enters code figures in the supplementary notes column to explain deviations from the anticipated production schedule. Each such explanatory code figure must be accompanied by a detailed written report explaining the background of the deviation. The report form used is also shown in FIGURE 11.
4. Signs the sheet, dates it and indicates mailing address to which the next report goes.
5. Mails one copy of the amended report to the Washington Office of the Training Film and Motion Picture Branch, Cataloging Section. (The second copy is for him to retain.)

Thus, the exacting requirements set down for a production control system have been met in virtually every respect. All essential information is recorded in an easily interpreted form and may be reproduced mechanically in any order and at great speed without fear of the typographical errors inherent in a manually prepared list. It is easy to maintain—both for the project supervisor and the Washington Office—and any difficulty encountered by a supervisor or producer causing the film to fall behind schedule is readily detected. And finally, expansion is achieved by the simple expedient of adding more cards to the deck so, for all practical purposes, there is no limit to the production load upon which records can be maintained smoothly and efficiently.

(FIGURE 11)

This 1918 "E" AWARD-

Presented to
Bosworth, DeFrenes & Felton
In recognition of patriotic services for the United States during the period of its participation in the great war for Universal Democracy. The splendid morale of the people upon which rested the success of the Army and Navy, was in no small measure due to the visualization of the activities of the Nation presented through the medium of the motion picture.
UNITED STATES GOVERNMENT
Committee on Public Information
Chairman
Secretary of State
Secretary of War
Secretary of the Navy
Director
Division of Films

was presented to the DeFrenes Organization in recognition of their motion picture productions during the first World War.

Since Pearl Harbor, DeFrenes' facilities and experience have helped the war effort by the production of training films for the Army, the Navy, the United States Office of Education and vital war industries, transmitting ideas and skills in Aeronautics, Asepsis, Automotive Safety and Maintenance, Gas Welding and Cutting, Military Ordnance, Navigation, Personnel and Management, Surgery, and many other important fields.

For 29 years American businessmen in industries like your own have used DeFrenes to help solve problems in job training, sales training and promotion, advertising, and public relations.

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MOTION PICTURES • SLIDE FILMS

JOHNNY GOT HIS FIRST ZERO WITH *Optical Bullets!*

NOW IT CAN BE TOLD, how—on a miniature screen, enemy planes whiz by in authentic attack formations . . . How in his hand the electrically operated trigger has a *natural* feel . . . How later—as he reviews his first actual combat experience—Johnny is bound to realize that in battle "know-how," he was an experienced veteran before he fired his first *real* shot!

Now it can be revealed that one of the principal reasons our Navy's gunners have been knocking down Japs—*often at a rate of 10 to 1*—is the DEVRY *Panoramic Gunnery Trainer*—an electronic motion picture training device that gives pilots, aircraft and anti-aircraft gunners at Navy training centers, distant bases, and on battleships and aircraft carriers—accurately simulated combat experience without the expenditure of costly ammunition or the risk of valuable American lives. DEVRY Corporation, 1111 Armitage Ave., Chicago 14, Ill.

DEVRY *Panoramic Gunnery Trainers* reflect DEVry's years of experience in building precision 35mm. motion picture sound equipment for the world's finest theaters, 16mm. equipment and other audio-visual training devices for business, industry and the nation's schools. They are "direct descendants" of the portable motion picture projector developed by the late Dr. Herman A. DeVry in 1913—more than 30 years ago. They portend postwar developments and applications of new and more effective DEVry audio-visual equipment for the teaching of students, the training of workers and salesmen—and for taking out to the cross-roads and into the class and conference rooms of the world, the universal language of motion pictures, applied to practically any training or selling task.

The Mark-1 DEVRY *Panoramic Gunnery Trainer*—acclaimed as one of the Bureau of Aeronautics' most effective synthetic weapons—is pictured above, mounted in a turret. To the right is shown the *Mark-2 Trainer*, mounted to a 20mm. gun. DEVRY *Panoramic Gunnery Trainers* are used in connection with any type of ordnance: Aerial gun, turret, anti-aircraft, and so forth.

It's only half a Victory until we lick the Japs . . . *Your bonds will help!*

5-TIME WINNER

DEVRY alone has been awarded five consecutive Army-Navy "E's" for excellence in the production of motion picture sound equipment and electronic training devices for the armed forces.

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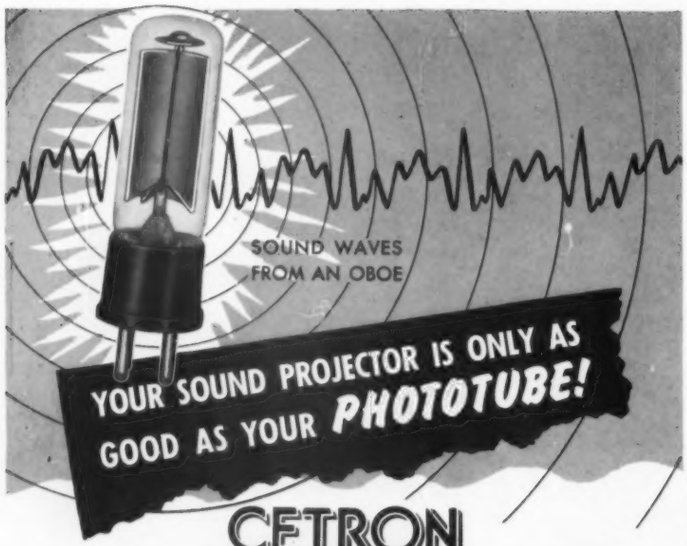
MOTION PICTURE SOUND EQUIPMENT
DeVry
Chicago
Symbol of Quality
Estab 1913

In awarding DEVRY the first of its five "E" flags a ranking Naval officer declared: "*The movie equipment and training devices you turn out are vitally necessary. Lack of this equipment every day means the loss of ships, planes and the men who man them.*"

WORLD'S MOST COMPLETE LINE OF MOTION PICTURE SOUND EQUIPMENT — SINCE 1913



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PHOTOTUBES PERFORM BRILLIANTLY!

Expect more from your sound track when you use CETRONS ... you'll not be disappointed! ... Being pioneers in phototube development, it's no wonder that CETRON phototubes enjoy wider usage *by many times over* than many other types *combined.*

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THE "PT" PROGRAM

(Continued from page 52)

methods, techniques in film projection, and care and replacement of materials.

An Instructor's Guide was provided for use with each of the sixty-nine films and its accompanying booklets. These guides followed the general doctrine defined by the United States Navy Training Aids Manual, *More Learning in Less Time.* They contained lesson plans which divide each teaching unit into seven steps: (1) Purpose of the unit, (2) Content, (3) Preparation for teaching, (4) Points to look for, (5) Test, (6) Follow-up activities, and, finally, the Voice Script with Notes for Review.

Student Review Booklets were printed with complete sets of notes on each subject, and with additional information not appropriate for visual presentation. About thirty per cent of the pictures in each film strip were used to illustrate the booklets. Test questions were included in the booklets so that the student can check in a few minutes how much he has learned. Blank pages were provided for the student's personal notes.

As an additional visual aid for instruction to be used after film presentation and during demonstrations and shop practice, twenty Reference Charts (36" x 48") were made. These are suitable for individual use, for use by small discussion groups, and for reference purposes in the shop. One chart is supplied on each system of the engine, (fuel, ignition, cooling, etc.), and several are included on special units such as the reverse gear.

The recommended class schedule follows the standard Navy instruction procedure:

(1) *Preparation:* A brief talk by the instructor on what was covered in the previous lesson, its relation to the current lesson, and the points for which the student should look.

(2) *Presentation:* The showing of the sound slide film, followed by a short summary by the instructor, and the distribution by the Student Review Booklets.

(3) *Demonstration-Discussion:* Demonstration of the content of the lesson by the instructor or some student using the equipment and the charts followed by a discussion period.

(4) *Application:* The performance of the job by the student himself, with the instructor observing and correcting him during his work.

(5) *Review and Test:* The projection of the slide film without the record, and discussion of the key frames by the instructor and the students. The Instructor's Guide is followed by the instructor to insure that all points are covered. An oral quiz completes the unit. The students retain the Student Review Booklet for further study and reference.

The initial research at the start of the program, and subsequent conferences, revealed that such a complete and complex program merited indoctrination of instructors in its use, scope, and possibilities. Therefore, after completion of the program planning, and development of instructional materials, a selected group of men was called in from duty in the Pacific and other war theaters. These men were given a complete preview of the program, demonstrations in its use, and were returned to advanced bases as instructors.

This training program is being used by the Navy, the Coast Guard, the Army Air Force, and by the navies of the Great Britain, Canada, Russia, and the Netherlands. Its usefulness in Navy schools and bases has been demonstrated.

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SPECTACULAR... ISN'T IT?

and equally spectacular has been the Navy's use of training films.

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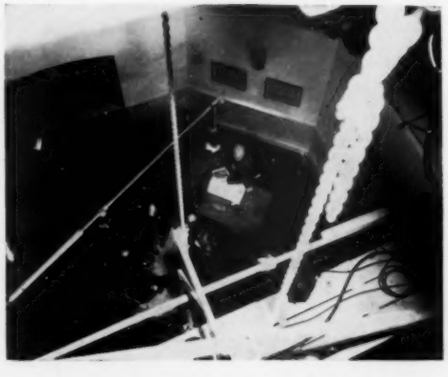
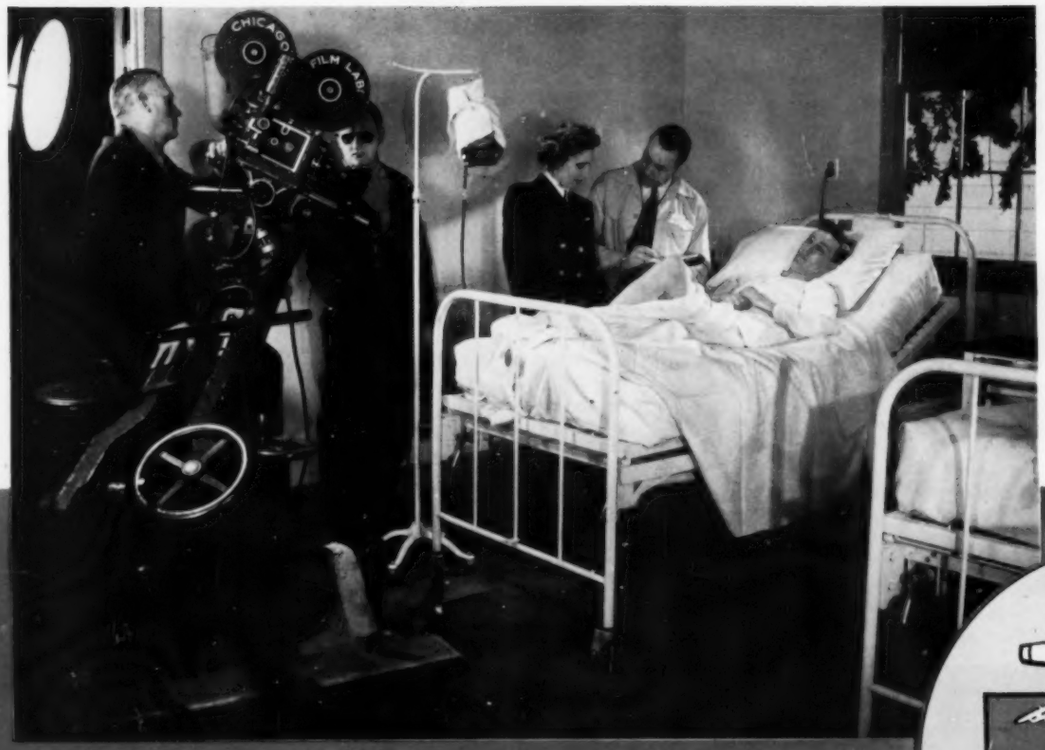
HOLLYWOOD (28) CALIF.

★

On the production stage during the making of a Navy training film.

★





Training Films Save Lives

"Ninety-eight of every one hundred Navy men and marines wounded in the first three years of war have recovered."
—James Forrestal, Secretary of the Navy

Behind the text of Navy Secretary Forrestal's recent statement lies the story of a vital training program designed "to keep as many men at as many guns as many days as possible." At the heart of this program are the training films in the Hospital Corpsmen Series produced for the Navy's Bureau of Medicine and Surgery. It has been our privilege to assist the officers and men of the Training Film and Motion Picture Branch in the production of these essential films.

Chicago Film Studios

CHICAGO FILM LABORATORY, INC.

MOTION PICTURES — SLIDE FILMS

STUDIO AND GENERAL OFFICE—18 WEST WALTON PLACE—CHICAGO, ILL.—WHITEHALL 6971

SOME TRAINING FILMS ARE BETTER THAN OTHERS

(Continued from page 53)

of misinterpretation of its implications may be found in the famous slide film on a technical subject which provided the audience with a medium shot of a pin up girl every tenth frame. The amateur producer assumed that the subject matter held no interest for the audience, that the audience could not be expected to look at his picture sans femme, and that if the audience could be interested in a totally unrelated subject, simultaneously to the showing of the picture, enough transfer would occur to promote learning. The success of such a device is subject to question.

The opposite point of view was taken by the makers of the Navy Ship Building films. They proceeded on the assumption that their technical subject itself held interest factors. They set about to discover those factors and discovered them within the subject. Simple, direct, concise films that held audience interest within the framework of the problem and its solution were the result.

A common error lies in elaboration of characters and the addition of a plot to add interest. Again, the mistake lies in two erroneous basic assumptions:

(a) That the problem and its solution contain no audience interest.

(b) That interest and learning are identical.

Man learns steps in procedure best when he can arrange those steps into groups.

Often the Navy produces training films for the purpose of teaching procedural steps. Assembly, disassembly and overhaul pictures are examples. As the demonstrator addresses his engine, removing five bolts and a part here, three bolts and another part there, the audience experiences little difficulty in ascribing to each a pattern. As a matter of fact, the procedure in removing a single bolt becomes a mental pattern though relatively insignificant. That of five bolts and the part, a new group or pattern.

Man seems to seek continually to group steps into patterns and patterns into patterns until the whole complete procedure is grasped and learned. But let fifteen unrelated steps be taken by the demonstrator—let him proceed about the engine removing a bolt here and turning a knob there without visible results or without presenting an opportunity for grouping, and the audience will become so intent on applying a pattern to the procedure that it will confuse itself by its own frustration.

Procedural films which provide the maximum opportunity for the discovery of convergent patterns appear to possess superior qualities.

Man requires frequent reorientation to a complex problem during its solution.

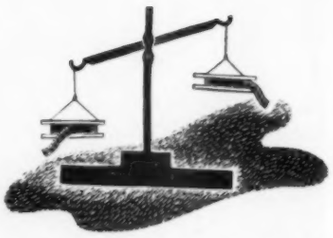
A recent film involved a dramatic but comparatively complex problem of naval communication. The characters included two dozen officers and men located on several ships. The properties consisted of communication equipment for each man, a friendly and an enemy task force. A strait and its approaches provided the location. The makers of the film deserve all credit for isolating the problem and presenting it in its simplest and most practical form. Furthermore, they handled a combination of photography and animation with superior skill, except for one aspect. The audience, after the first few minutes, struggled mightily to maintain precise orientation to the situation. Moving from ship to ship to view examples of techniques in the use of equipment while attempting simultaneously to follow the naval action, the audience became so engrossed with the problem of its own position that it missed important steps in the solution of the problem.

It is safe to assume that the necessity for reorientation increases in direct proportion to the complexity of the problem and its solution.

The camera that not only moves the audience toward the focus of activity for a close up, but as often back again for a glance at the problem, whether it be engine overhaul or navigation, is the one that contributes to the fulfillment of psychological necessity in learning.

Man appears to be motivated to action more often through his emotions than by his reason.

There is no attempt here to differentiate sharply between rational action and emotional reaction. Man appears to be much more of an organismic entity than he was once thought to be. As such, his emotions and his reasoning power must be considered inseparable to a large degree. Still it may be assumed that one may predominate in one instance and the other in another.



A training film may be assigned the responsibility of providing a trainee with information on which to act, the knowledge of how and when to act, and the desire to act in the right way at the right time. When the last is included in the assignment, the training film maker may well begin to consider emotional appeals. Probably the desire to act is emotional in nature. Furthermore, it is probable that the emplanting of such a desire can be effected best by emotional means. This may be the time for the old master to bring out *Anchors Aweigh* and scenes of battle ships plowing through high seas! If such tricks wring the heart strings of the old master, they may touch some of the audience. Who knows? But one must not expect too much of such cliches.

Responsible for motivating the greatest number in a heterogeneous audience, the film must possess a number and variety of emotional appeals. The expert in the use of music can hardly rely on that medium alone. Some of the trainees may be reached by the music, a few by the acting, others by the photography, by the narrator, by the tempo, by the color or by another device. Somehow, they all must be reached.

In summary, the success of the maker of training films rests with the success of his picture. That of the picture with the success of the audience. But only further scientific study will tell precisely when one film is better than another. In the meantime, the training film maker can well study the application of techniques of motion picture making to the fund of knowledge available on the nature of man and his learning process.

When better training films are made, they will result from a combination of the experience and knowledge of those who have the keenest sense of visual interpretation and presentation and those who consciously or unconsciously understand most clearly how man learns and what will motivate him to action.

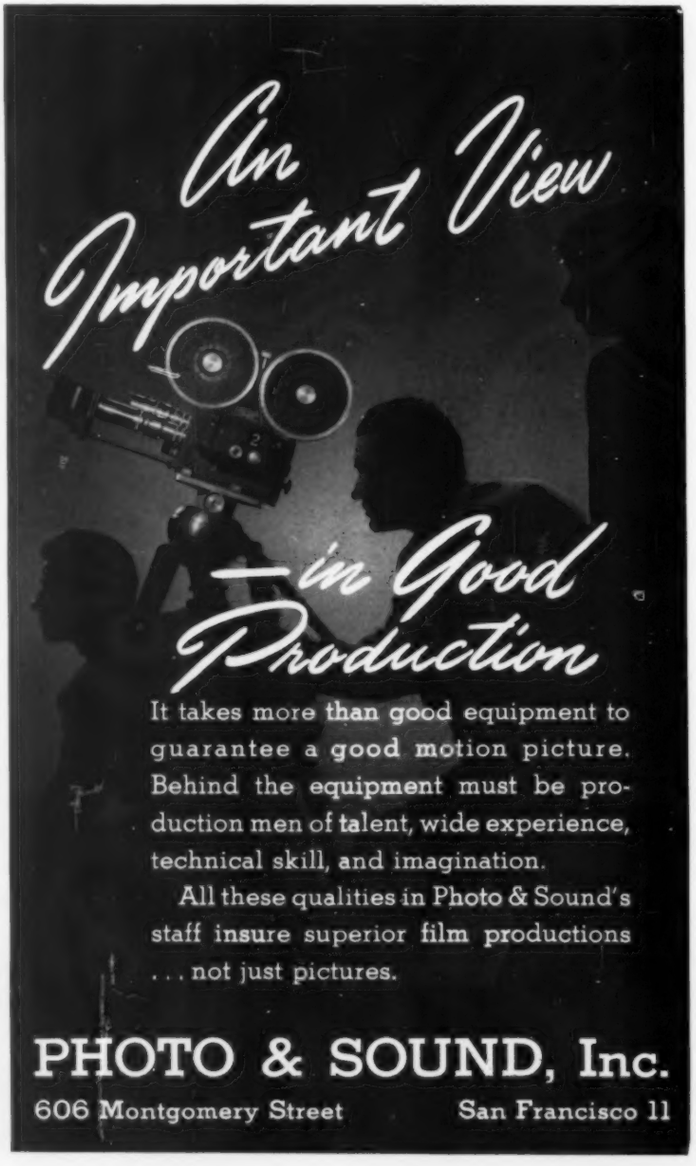
* * *

Training Films at War

* Training films have been designed to be used in classrooms as a part of the course of instruction . . . they were produced to help the instructor make ideas and necessary standardized operations clear to his classes.

If used correctly, the films should liven up teaching, help the men learn more quickly and thoroughly, and set higher standards of performance.

—From Navy Instructions to Training Officers Using Films


An Important View
—in Good Production
It takes more than good equipment to guarantee a good motion picture. Behind the equipment must be production men of talent, wide experience, technical skill, and imagination.
All these qualities in Photo & Sound's staff insure superior film productions . . . not just pictures.
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To serve such a great industry is both a privilege and a responsibility. For ten years, PRESTO has enjoyed that privilege, has been keenly aware of the responsibility. As the world's largest manufacturers of sound recording equipment and discs, we have striven to serve the radio industry as faithfully and with as high integrity as the radio industry has served the American people.

... and a great nation at war

PRESTO sound recorders are being used today to train Army and Navy personnel; to bring music and news to our front-line troops; to counteract enemy propaganda the world over. In addition, the PRESTO plant has become a major supplier of electronic equipment for the armed forces. In these ways, and to the limit of our ability, PRESTO is contributing to our war effort.

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WORLD'S LARGEST MANUFACTURERS OF INSTANTANEOUS SOUND RECORDING EQUIPMENT AND DISCS

What is a PROJECT SUPERVISOR?

(Continued from page 63)

as equitably as possible.

The procedures of the Training Film and Motion Picture Branch are so planned that the same Project Supervisor usually follows a picture through all stages of production from start to finish. It is the Project Supervisor who prepares the Production Outline, the initial step in getting a project under way. The Production Outline establishes the type of film to be produced and the techniques to be used. Using this as a guide, the producer is in a position to submit an accurate bid on the script for the picture.

The Project Supervisor, working with the Technical Advisor, directs the indoctrination of the script writer into the intricacies of his subject. While the script is being written, he continues to provide ideas and is as helpful as possible in providing information. When the final draft is ready, he shepherds it through the winding channels of approval in Washington and elsewhere. That's the beginning.

He obtains security releases for the crew, explores the contemplated location of the shooting and, backed by a letter from Washington, makes the contacts with the local Naval authorities. More often than not he finds accommodations for the crew in the field and meets them when they arrive. Then begins the day-by-day scheduling of personnel and materiel. What do you need, a ship, a plane, a carpenter, a truck, a tall blond sailor who can act, an expressman, or "cokes" for the crowd? Ask the Project Supervisor.

When the rushes begin to arrive, he sits in on the screenings with the Technical Adviser and approves for photographic quality, coverage, and general treatment. He tries to be around when the cutter is putting the job together. There are always questions. If there is any rewriting, he passes on it. He looks at the rough cut and says, "that's it" or "that's not it." If that's not it, he has to be constructive on the spot.

When the interlock version is up for an approval screening in Washington he goes over it ahead of time with an extra careful eye. In the last analysis, as Project Supervisor, he is the man responsible to the Navy for a successful production. The final composite print tells the story. If it's good the Project Supervisor can hurry back to that other job he's trying to get under way. If it's not, the headaches are his as well as the producers.

In all of these efforts, the Project Supervisor works in close contact with the Training Film and Motion Picture Branch in Washington. Here there are facilities which do much to lighten the load of detail and responsibility. Script and production experts are available for consultation when necessary. There is an "Operations Desk" where the Project Supervisor can learn the best locations for the photography his projects require, and find out where ships, planes or personnel are available. The Operations Desk also arranges for letters to the facilities involved. These letters establish the required "official" status for the Project Supervisor and his camera crew and smooth the way for them in the field and aboard ship.

Financial and contractual dealings with civilian producers are handled by the Procurement Section of the Training Film and Motion Picture Branch. However, the Project Supervisor must know budgets and contracts and is responsible for keeping an eye on costs.

Arrangements for security clearances are all handled by a "Security" desk in Washington. The Project Supervisor interviews the men who will make up the production unit to go aboard ship or to work at a Navy shore station and turns the required information on them over to "Security." From then on the complicated process of issuing clearance papers is out of his hands.

In the Training Film and Motion Picture Branch each Project Supervisor works under a Project Officer who is his immediate superior. The Project Officer's function is two-fold. He oversees the Project Supervisor's work for the Training Film and Motion Picture Branch, knows what is going on and what progress is being made. In addition, he also acts as liaison officer between the Project Supervisor and the facilities of the "Branch," particularly when the Project Supervisor is working out of Washington. If, when on location, the Project Supervisor finds that he needs clearance for additional civilian personnel or a letter authorizing him to work in an additional location, he can get in touch with his Project Officer who will set in motion the proper machinery in Washington.

Counting the Training Film and Motion Picture Branch, the Photo Science Laboratory, and the Photo Services Depot in Hollywood, the Navy has about 100 Project Supervisors on the job. With few exceptions, these men have been commissioned since Pearl Harbor. Most of them were selected specifically for training film work. Their backgrounds vary widely. Many were engaged in actual motion picture production in civilian life as script writers, directors, and producers. Some were educators with visual education experience, more familiar with utilization than production. Some were animation experts. Among them are actors, news commentators and men who know laboratory technique. Their varied experience brought to bear on the problem of producing effective training films has been exceedingly valuable. The "lab" man sees one side, the script writer another, the utilization man another. Working together, they have indoctrinated each other so that now all of the Project Supervisors have some knowledge of all aspects of production in addition to being, in most cases, specialists in one aspect.

So . . . what is a Project Supervisor? He's the field Lieutenant of the Navy's film producing machinery. Dealing with the day-to-day problems of production, he indoctrinates and leads the individual production crews toward the final objective—training films which do an effective training job.

Not many Project Supervisors wear service ribbons. They don't take part in engagements with the enemy and if they visit a foreign theatre of war it's usually just long enough to photograph what's needed and head for home. But when the communiques report that "photographic reconnaissance showed all bombs were on target," or that "the landing operation is ahead of schedule," the Project Supervisors along with the other members of the "Training Films" staff are privileged to allow themselves at least a twinge of satisfaction. For all along the line, from the dark days of 1942 to the greatest Navy in the World in 1945, training films have been an important factor in giving the American Navy its unprecedented "know how."

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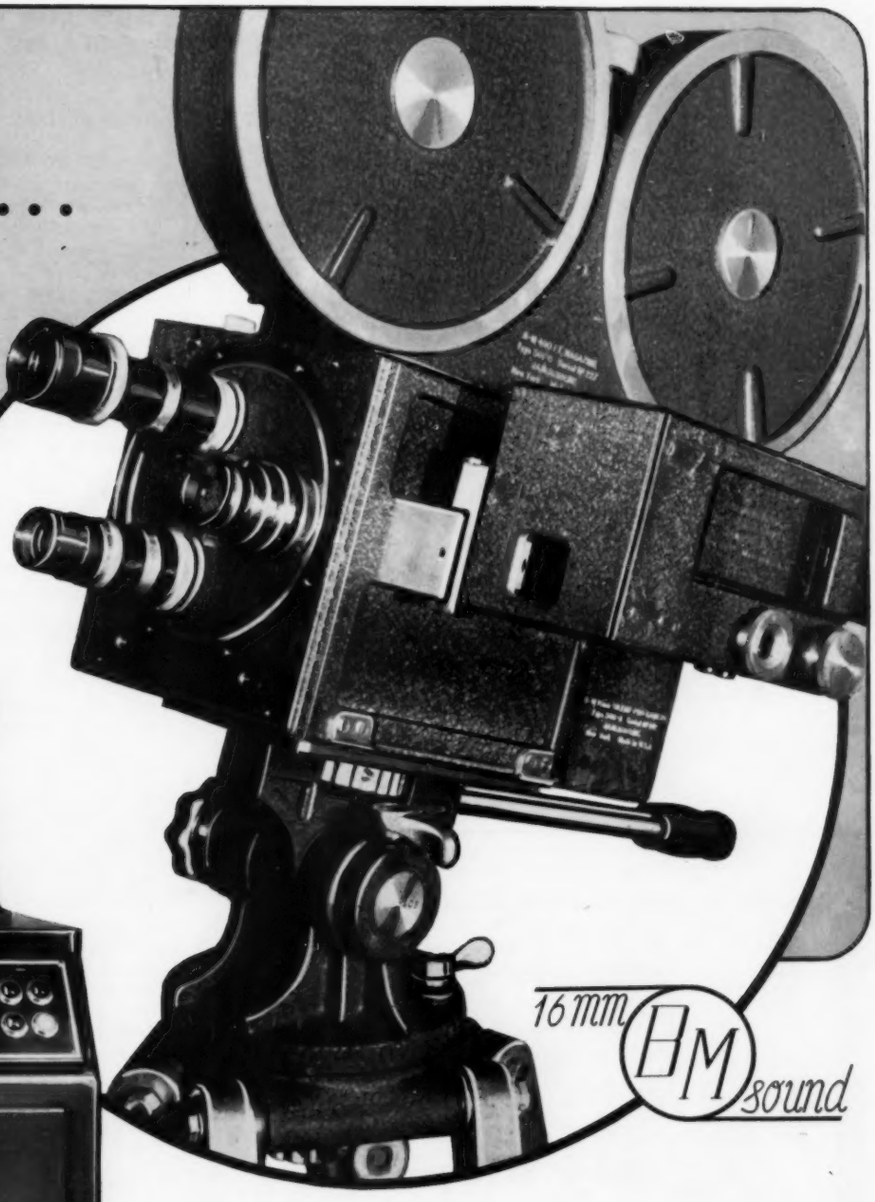

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American Industry, looking forward to a new era of education, training and progress with the aid of the 16mm Sound Motion Picture, can arrange now for the purchase of new B-M Motion Picture and Sound Recording Equipment for post-war delivery.

Your inquiries are invited.

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AIDS FOR PSYCHIATRY

(Continued from page 68)

the story must be generally applicable to all the persons who are its potential audience. Therefore, the audience has to be carefully selected. Beneficial treatment by these adjuncts has to be on a prescription basis. Not every kind of medicine is good for all persons; by the same token not every film can be equally good for all persons. The reactions of the characters must be sufficiently typical so that each member of the selected audience can with little difficulty substitute himself and his reactions for those he sees. The emotional tone the film creates has to be balanced carefully between two extremes. At the same time that it evokes a response, it must shield the audience against a too great emotional release which is likely to produce additional psychological symptoms in self-defense.

Prepare for Discussions

The audio-visual aids in psychiatric treatment and training which have been produced have the immediate job of preparing an informative background for profitable group discussions between psychiatric patients and their medical officer. They have been made purposely to provoke further discussion. Therefore, they do not undertake to answer everybody's personal questions and solve everybody's psychological problems, much less "cure" any illness. They are not quick easy ways or short-cuts to psychiatry. After each patient-audience sees a psychiatric treatment film, they should be given the opportunity for an open discussion with a psychiatrist. The film has to be constructed with this end in view. Experience has shown that this method of presentation is followed by the best results. Their value to the patients can be measured by the doctor since it is gauged by such signs as increased appetite, more satisfactory sleep, a wider sphere of outside interests; by a better social adjustment and by the patient's optimistic response to the question: "Have our talks been more profitable as a result of that film?"

Great Post-War Promise

Like many new fields which wartime innovations have brought into prominence, the field of audio-visual education in medicine offers much promise in the post-war world. The importance of prescription, tailor-made productions cannot be over-emphasized, for the medical usefulness of motion pictures is directly proportional to their scientific accuracy and medical validity. No matter how excellent a medical film may be from a motion-picture standpoint, the criteria of its value are the results obtained by its use in the medical education of students or physicians or patients. The production of these aids requires the best efforts of many specialists in different and seemingly non-related fields. The lack of this cooperative endeavor in the pre-war period has delayed considerably such application. Much further research work on the techniques for which the war has been responsible is required before one can state with certainty the value of specific productions in certain phases of medicine. But this much is apparent—audio-visual education is a potent lever, and properly wielded it can move medicine forward.

MEDICAL FILMS AT WAR

(Continued from page 62)

Through films, medical officers are receiving detailed information from the field. These reports were greatly aided by the establishment in June 1943 of the Field Medical Photographic Units. One unit was sent to the European theater of operations, and a second was dispatched to cover the South Pacific areas. Since then, other units have been sent to all parts of the world. Under the direction of a medical officer, trained motion picture crews make film reports on the activities of doctors and hospital corpsmen under combat conditions. These reports appear monthly in the series called "*Medicine in Action* containing such titles as *Typhus in Naples, Trench Foot* and *Soft Tissue Wounds.* In this way, information on ingenious emergency measures as well as established techniques has been brought swiftly and graphically to all branches of the naval medical service.

The field units photograph medical films exclusively in 16mm color. Color provides diagnostic information; flesh wounds are far more vivid and realistic, and different parts of the anatomy and their condition are more readily distinguished.

BuMed has pioneered in a new and highly important field in which films are playing a vital part: physical and mental rehabilitation. This field is divided into three groups: returning a casualty to duty, training casualties during convalescence, and helping prepare men for return to civilian life. The overall aim of these films is to aid men to a proper understanding of their condition so that they will assume an active part in their own treatment. Many of these films are designed to tell a man what is wrong with him and to reassure him that his reaction to certain situations is not unusual. The series on *Combat Fatigue* shows men how to understand the nature and effects of fear, and serves as a therapeutic device.

While it is impossible to measure accurately the contribution made by films to the work of BuMed during the war, it is safe to say that they have contributed largely to the following very tangible achievements of Navy medicine: better care of the sick and wounded, reduction of fatalities during medical care, an *esprit de corps* on the part of medical personnel and a feeling of participation in each other's work, and, finally, an improvement in the morale of the whole Naval service due to the dissemination of information about the effective work of the Medical Corps.

PROJECTED TO IT'S LOGICAL CONCLUSION

SLIDES form the backbone of Navy recognition training. For three years we have produced millions of these slides and three dimension materials to implement the program of teaching our Navy men to spot the enemy . . . to increase their speed and span of recognition.

Busy? Sure! We had our swing shifts . . . but now with the easing of the pressure on our facilities we are thinking in terms of another shift . . . the swing to civilian activity.

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Present Your Product in Life-Like Pictures That Have Height, Width, Color and DEPTH

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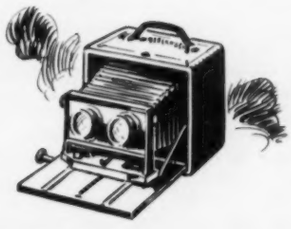
Wherever pictures are used, this vital new selling force can be tailored to your own presentation program.

Three Dimension Pictures in color for conventions and trade shows . . . auditorium use . . . counter displays . . . salesmen's viewers.

Polaroid* Three Dimension Vectographs in black & white for direct mail, sales brochures and projection.



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TRAINING FILM ART

(Continued from page 73)

ing film must serve the art of instruction. The art of an instructor is dependent upon the factors of personality and facility for effective organization of subject matter, apart from a thorough knowledge of the latter. The ideas used in developing screen-presentation of subject matter must do for the training film what these factors do for the instructor.

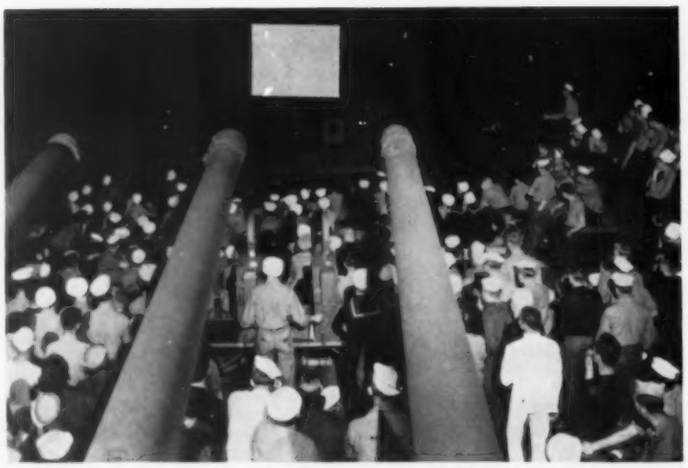
The importance of appropriate handling of the ideological aspect of a training film must be emphasized for it is the one overall factor that most influences a film's instructional effectiveness. An over emphasis on story or dramatic construction, however entertaining, may result in a loss of a film's effectiveness in doing the training job for which it was produced. One example of a frequent ideological error is reliance upon a story with characters speaking in synched dialog, rather than upon the ability of the camera, to maintain audience interest by showing technical subject matter that is interesting in itself. The technique by which the learner is instructed by listening to and observing one screen character telling upon another screen character about the subject is not an efficient use of the medium. The more directly the screen addresses the learner, the more effective it will be in instruction. Subordinating the camera to the sound track, as so often happens in a film with actors speaking lines, does not result in efficient or effective films. This technique is instruction by indirection.

The determination of a fitting and effective treatment for different types of subject matter must be made on the basis of the instructional efficiency of that treatment. The achievement desired is an optimum blending of the art of instruction with the art of the screen. Success in this results in training films of maximum effectiveness.

The influence of the factor of utilization on the ideology of training films must be considered. If a story or plot idea is used, it is the first feature of a training film that wears out in one showing. Necessary subsequent showings of such a film to the same trainees is difficult.

The importance of stories, characters, actors, plots, music and so on in technical training films has been done in the belief that these were the ingredients that would make the films interesting. The inherent honesty of the medium has exposed the transparency of many such devices as they have been employed. It is possible that the devices used were not suitable, or that the energy and talent of the creators of such films have been dissipated in handling the drama rather than the subject. On the other hand, when the basic attributes of the motion picture are employed, the results are usually excellent training films, interesting and instructive.

While considerable experience has been gained in the ideological aspect of training film art there is still much to be learned about it. How many purposes or objectives a single instructional film can encompass or achieve is unknown. Unknown, too, is the amount of subject matter that can be successfully included in a single film; the influence of the relationship of the film to the instructor and the student upon the ideas used in the screen presentation of subject matter, the best methods for incorporating the psychology of learning into training film ideology. The list can be extended. It indicates the areas in which considerable research is needed to prove and support the assumptions, at present based only on opinion, that are now being used to answer these questions.



Men of a U. S. Cruiser enjoy a motion picture . . . one of several supplied by the Navy's Exchange. Here weather permits showing on after deck under the impressive six-inch guns with a pair of sturdy DeVry 35mm dual projectors shown on one of their war assignments.

The Technical Aspect! The technical aspect of the training film art, like that of the theatrical film, involves the arts and crafts of photography, writing, sounds and graphics. In the training film each of these serve two masters. One is training and the other is motion.

Training is served by photography, sound and graphics primarily through the ideology in which they are employed. Writing serves training by developing and specifying the ideology to be used as well as the directions for the use of photography, sound and graphics.

Motion, the unique feature of the motion picture, is served by these arts and crafts in much the same way as they serve training. Since motion is essentially the essence of the motion picture, its function makes it the important technical characteristic of the motion picture art.

The power of movement or *motion* in instruction or entertainment but especially the former, is generated physiologically. Because of its physiological structure and function, the eye is poised to catch and follow anything it sees that moves. It will follow a particular movement or motion only so long as the final disposition of that motion is unknown or until the motion ceases to be of concern. As soon as this occurs, the eye catches another movement. If no other motion is occurring in its present field of vision, it will shift its position and follow what movement it finds available to its new field of view.

The eye reacts to the confines of the screen in the same manner. Continuous or nearly continuous screen motion stimulates the eye and keeps it on the screen. When screen movement is slowed up or reduced to a negligible amount, the screen exercises an hypnotic effect on the eye, and the observer develops a strong tendency towards sleep. This sleep can be described as *cinematic* hypnosis, for no matter how interested a person may be in what he is seeing, he will be unable to keep himself from it if screen motion is consistently slow or practically non-existent.

Few will disagree that the popularity and power of the motion picture stems from motion or movement. This is not to overlook its other features such as continuity, clarity of design and organization, constancy of form and eloquence, and enlargement, to mention only a few. Motion is a peculiar advantage possessed by only one

For the past nineteen months

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little colored images that comprise a 16MM KODACHROME DUPLICATE PRINT have flashed past our printer apertures to supply color training films to the Navy and other Armed Forces.

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of the many reproducible media of communication, the motion picture. Anything less than a full exploitation of motion in training film work is a disservice to the instructional motion picture screen. This is not to say that all motion should be gross, violent or continuous. It is not to say, either, that motion should be exploited at the expense of all other considerations but rather that its nature be understood in order that it may be used adroitly. Its function in the instructional picture is emphasized because the training film does not always provide the opportunity for surcharging the screen with dramatic, psychological implications that also keep a viewer's attention on the screen. In the theatrical film, psychological preoccupation with the unfolding drama often takes the place of overt visible motion. However, the instructional screen must rely more heavily on visible motion. Since it is the substance of the motion picture, it must be served by the camera, by the written, and subsequently spoken word, and by sound and graphics.

A training film script or scenario is the first tangible expression of the training ideology and film technology to be employed in the construction of a training film. Writing for the training film art is not a casual task for this is the stage which determines the basic excellence of the completed film. Proficiency in this type of writing presupposes a thorough grounding in the psychology of learning as well as a thorough, competent knowledge of the capabilities and limitations of the medium.

Scripting is the stage in which both the ideology and the technology of the art are committed; the stage in which the conception of the finished film takes place. The legitimacy or illegitimacy of the resulting issue will depend to a great degree upon the pedigree of the ideology and technology brought together in and given direction by the script. However, the midwives—camera, sound and graphics—must be competent if a still-film is to be avoided.

A training film becomes an example of the training film art at its best when the blending of the art of instruction and the art of the screen has been competent and skillful. The primary power of the screen lies in its ability to maintain attention and interest visually. The logic of the training film art is simply that the burden of instruction lies on the eye rather than the ear.

* * *

Special Advantages of Navy Training Films

★ Training films can bring many experiences to the men in Navy classrooms . . . in countless subjects, the film re-enacts movement; analyzes functions; adds natural sound to the action or object; appeals to the emotions; and portrays lifelike situations. These characteristics enable every man to have a front seat in Navy experience.

—More Learning in Less Time

CONGRATULATIONS TO THE UNITED STATES NAVY!

Congratulations to the U.S. Navy on the fine success of its Training Film Program! We are grateful that we have been privileged to make available to this program our facilities and 32 years' experience in Educational and Training Film production.

It has been our good fortune, also, to produce a large number of Training Film Units for the U.S. Office of Education's extensive program of Visual Training Aids. We are proud that we were the first producer to complete its quota of these units.

We are, also, proud that when the War Department lowered the minimum age limit for enlistment in the flying services to eighteen years, we had ready our own series of Pre-flight Training Films for use, not only by the Navy, but, also, in thousands of High Schools and training stations, saving weeks of vital training time.

BRAY STUDIOS originated the Animated Cartoon Processes, the Animated Technical Drawing, the Film Slide Type Projector and film, and made the first training films used by any Army.

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THE BRAY STUDIOS, INC.
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Films in Fire Control

(Continued from page 65)

velop the training procedures. Instead of one producer, there are now four producing companies working with the Training Film and Motion Picture Branch supervisors and the technical advisers. One complete building is used solely to house the civilian workers and the supervisors. Here the producing companies have their individual offices, staffed by writers, artists, executives and secretaries. Production is speeded up through this close association. Snags in technical, graphic or literary development can be quickly solved when all the parties involved can be consulted immediately by telephone or in person.

Although sound slide films (or "ping" movies, as some of the students call them) still make up the majority of the 200 odd films actually in production at the present time, there are also many motion pictures on the schedule.

No film is ever begun until the subject matter has first been exposed to a classroom test—no matter how sure the people concerned are of the desirability of such pictured and recorded presentation. Class-room lectures on new procedures or devices are laid out by the school's design committee, which meets regularly for this purpose. During the planning of the courses, the committee may become convinced that films would be beneficial; but no one says "All right, let's forget about the lectures and start outlining films." Instead, the lectures are conducted as originally planned, and in the classroom presentations the committee discovers more thoroughly the points that must be covered, and the students' reactions are gathered in the form of questions and observations.

The important thing to remember in this entire teaching pattern followed by the Ordnance and Gunnery Schools and the Fire Control Schools is that the films used are not simply appendages tacked on haphazardly to some existing program; they are discussed and set up in correlation with all other teaching aids—before instruction begins in the classroom. The design committee considers the best possible utilization of films in combination with textbooks, models, wall-charts, lectures and all assisting classroom and study activities. The committee gives extremely careful attention to the most effective use of the films, building them with deliberate intent into the structure of the school curriculum. This is the basic reason for the gratifying success of the films used by these schools.

Sometimes there are certain series of lectures which on first consideration do not seem to lend themselves to film treatment; yet on trial in the classroom it becomes apparent that films can be used to good advantage. Allowance is made for this possibility in designing the courses, and it is a fairly simple matter to blend the required films into the overall pattern.

These films do not, in most instances, materially reduce the time spent by the student in the lecture rooms, but they are giving the men a firmer grasp on the subjects covered. Why? Because the lecture which once took a full hour is now presented more clearly and in a more impressive manner in from eighteen to twenty-five minutes. Prior to the picture the instructor spends ten minutes explaining to the men what they are going to see; at the close of the film he summarizes the main points which have just been presented to them. The remainder of the time is taken up by questions from the audience. This type of presentation has been proved through numerous tests to be far superior to the straight lecture. The students grasp more and retain details for a greater period of time.

All the films are geared to reach a common denominator and to make the subjects easier to understand the films are usually divided into two or three sections to provide discussion breaks, which allow the instructor an opportunity to make sure his audience has fully understood the presentation up to that point. Occasionally cartoons are introduced to induce a more relaxed and receptive attitude on the part of the students.

Not only are these films used in the schools at Anacostia, but also in all A (primary teaching), B (specialized) and C (advanced technical training) schools throughout the country. They are also distributed in the fleet, and to U. S. Navy Bases scattered all over the world.

The system of planning, production and utilization which has been explained here has proved its worth. These visual aids have helped to train a tremendous number of gunnery officers and fire controlmen—indispensable members of a fighting ship's complement.

U.S. NAVY NAVIGATION TRAINING FILMS

TITLES

The Earth — Charts — Piloting
Fog Piloting — Night Piloting — Time
Time at Sea — Nautical Astronomy
The Astronomical Triangle
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One of the many comments received by the schools came from the commanding officer of a ship that has seen much action in recent campaigns. His letter said, in part: "The films were so clearly explained, so complete and accurate, that they both held the attention of the classes and gave them an understanding of the subject such that the men immediately gave evidence of their value by being of great assistance to the few trained men in repair work and maintenance of their equipment. Again I wish to compliment those who assisted in making the films available to us in the fleet."

MARINES GET ACTION

(Continued from page 50)

Meanwhile the films exposed during the previous operation have also been rushed to Headquarters, Marine Corps. There some of the footage is selected for release to newsreels; other footage is made available for use in War Information and Industrial Incentive films. At times, the film is submitted to the motion picture industry for use in the production of a theatrical release.

The bulk of the film from an operation is used for the production of combat film reports, operation critiques, and training films. These subjects when completed are distributed throughout the Marine Corps by an efficient system of training aids libraries. They are also made available to the other armed services of this country and to our allies.

The Japanese is the most tenacious and fanatical enemy ever encountered. They have had the advantage of fixed positions and relatively short lines of supply. Time to fortify their islands has been to their advantage.

Our advantage is in superior equipment and skill in using the equipment. This skill is acquired through training. It is now an accepted fact in civilian circles as well as in military circles that the efficient use of training films together with other training aids is a major factor in military training. When the U. S. flag is raised over Tokyo some of the credit for that achievement will belong to training films.

TRAINING FILM FORMULA

(Continued from page 56)

that (1) the known truth about any subject can be determined at a given time; (2) the truth can be interpreted and delimited for given objectives for a given audience; (3) the interpretation of the truth can be visualized; (4) it can be presented in words; and (5) all this can be combined and blended with a variety of emphases for definite purposes.

To summarize, training films are scientifically constructed when all of these factors are understood and used creatively for their full potential, *and they should be predictable in terms of human behavior.*

STORY DEVELOPMENT

(Continued from page 79)

In spite of controls such as these, the Navy recognizes that most films eventually get down to personalities and that the end product is often only as effective as the talent supplied. Nevertheless, the Navy has found that its system of story development and script control makes the best possible utilization of its talent and does insure the production of pictures that accomplish the training task that is required of them with a minimum use of time and money.

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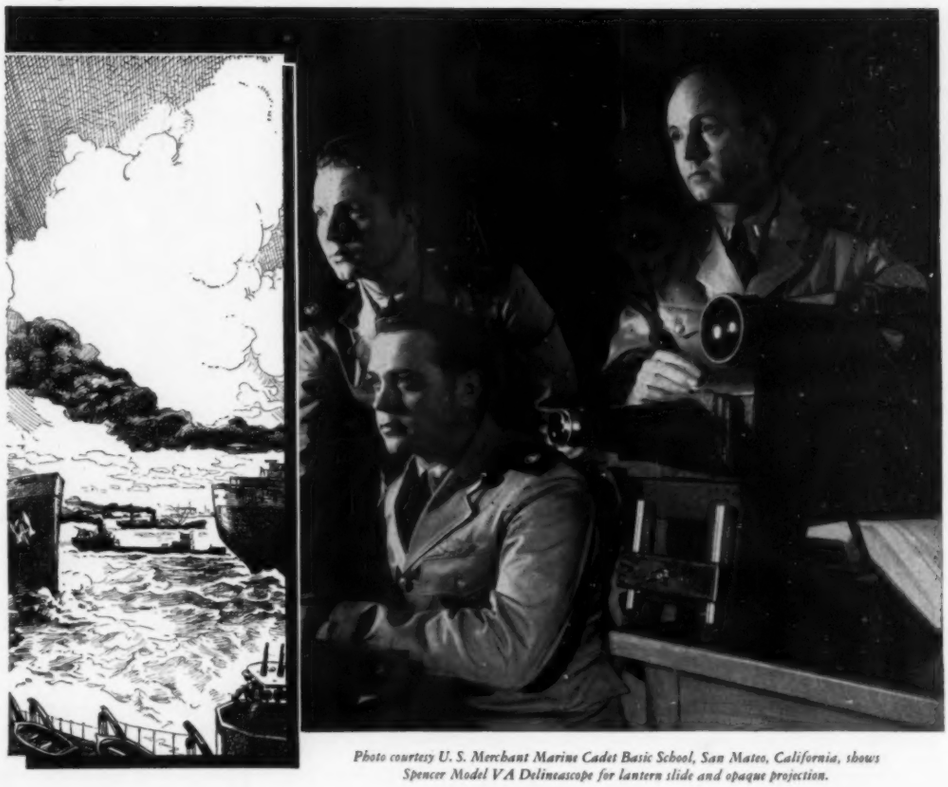

Photo courtesy U. S. Merchant Marine Cadet Basic School, San Mateo, California, shows Spencer Model VA Delineascope for lantern slide and opaque projection.

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A Message to the American People

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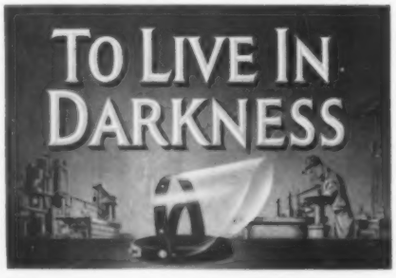

"To Live in Darkness" winner of the National Safety Council's 1945 award for the outstanding motion picture in the field of safety education, is but another example of the importance of the basic script to any quality motion picture.

We are grateful to the Navy and to American Industry for becoming increasingly aware of our proven major studio experience in the writing and producing of award-important motion pictures.

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INAUGURATING NEW MANUFACTURER-DEALER SERVICE PROGRAM: President J. H. McNabb of Bell & Howell (right) shows E. K. Stoppelwerth of Pictosound Movie Service of St. Louis the new trailer which is the first of a fleet of such equipments soon to go into the projector service field.

★ FIRST OF A FLEET of mechanically-equipped service trailers which will provide door-to-door service for users of Bell & Howell Co. equipment was exhibited to the public in Chicago May 9.

The trailers are part of Bell & Howell's postwar program to provide skilled maintenance service to schools, churches, commercial firms, organizations, and other users of its 16mm sound and silent movie projection equipment. The trailers, each to be in charge of a graduate of its training school, will operate on a regular schedule so that equipment can be serviced periodically.

"This will mean considerable savings in time and money to our customers as well as prolong the life of the equipment," Wally Moen, sales manager, said. "Frequently this equipment is used so extensively, and without proper servicing, that a breakdown might occur. Then there's a delay while the equipment is packaged, shipped to the factory or to a service station, and repaired.

"Nearly all this loss in time and expense will be saved when the traveling service stations are able to service the equipment on a regular schedule. During these service trips the equipment will be inspected, cleaned, lubricated, and any worn parts replaced."

The trailers also will be equipped with a good supply of 16mm film from Bell & Howell's rental library, as well as equipment for film splicing and repairs. Other trailer units will be added as rapidly as postwar conversion will permit, according to J. H. McNabb, president. The company plans eventually to have every section of the country under its traveling trailer program.

First of the units has gone into service for Pictosound Movie Service of St. Louis, and will be manned by a graduate electrical engineer who has also completed the service course at the Bell & Howell factory. The territory of Pictosound Movie Service includes Southern Illinois, Eastern Missouri, and metropolitan St. Louis. Its officials believe they will need from three to five additional trailers to properly service their territory when the program is in full stride.

★ ROBERT H. PLEW, formerly on special assignments for *Life Magazine*, is now in charge of production of slidefilms for the Visual Training Corporation in Detroit. Mr. Plew was previously associated with the Jam Handy Organization and also engaged in U. S. Maritime Service for seven years.

(Above) Exterior view of the Pictosound's new service trailer now in operation. (Below) Mr. Stoppelwerth at work at one of the service counters which feature complete field repair and maintenance equipment.

SIMULATED COMBAT:

(Continued from page 77)

your section leader, you start on your mission. With your task force below, you identify by type and class individual ships. *Narrator calls number as each ship appears for 4-5 seconds after which title requesting identification is held on screen for 10 seconds while answers are recorded. Ship models—1 in. to 110 ft.—on a fabricated seascape were used for these sequences.*

Your section leader now indicates that he wants to communicate with you by hand signaling in Morse Code. You pull up closer and take the message down. *Throughout the film a narrator gives notice of approaching problems and explains what you are expected to do.*

Danger ahead! The enemy also has planes—and uses them. There they are at 12 o'clock—dead ahead. You have a fighter escort so it's vital to distinguish friend from foe. Identify them. Val. . . . F6F. . . . Hamp. . . . F4U. . . . Oscar. . . . *Same technique as in ship recognition sequences. These shots are partly gun camera, partly model work for coverage of recent type enemy planes.*

A wild melee and you've broken through the enemy fighter screen. There's your objective—the Jap task force. You have an assigned target among the big babies; also you'll have to make an accurate report later to your ACI officer. So identify them. DD-Teratsuki CA—Atago. . . . BB—Kongo. . . . CV—Shokaku. . . .

Your leader waggles his wings. You dive after him and release your bomb. A hit? You can't tell. But some of the boys were right on—because after you pull out you see Jap ships burning.

The attack's over but not your job. Remember? You've got to get back. Well, your homing course is plotted. Ought to be a breeze. Wait a minute! Code coming in. Get it down—it may mean your neck. Your carrier—under attack—is changing course. You drop a smoke flare, circle and correct your nagivation. *"Stop film" title.*

You fly your course . . . and fly . . . and fly. . . . Is you navigation off? Finally—some specks. You're in. Well, not quite. There's your carrier's blinker giving the challenge. If you don't want to be fired on, indicate the proper response. *On your answer sheet.*

You're in the final turn, your eyes glued on the landing signal officer. A wave-off! Up and over. What's the matter? The blinker flashes. Interpret it. *On your answer sheet.* Forgot flaps! Around again. This time you get the cut and drop her on the deck. Mission accomplished. *Answer pamphlets are now turned into the training officer for grading and appraisal. Running time of film: 23 minutes. Total time for "mission": Approximately 1 hour 15 min.*

Utilization reports have indicated immediate and concrete benefits from *Simulated Combat Missions.* As operational exercises they have aided greatly in sharpening pilot proficiencies. As tests, they have revealed mercilessly—or rather mercifully—deficiencies at the proper point, i.e., prior to combat. Several naval facilities have made them obligatory as final check-outs.

The reaction of the pilot trainees themselves has been excellent. They feel that the films have given them a pre-view of the real thing—and that they are better equipped to meet it. From one refreshingly human pilot came the query "What kind of people thought up these — — — — — — — things that make us work?" This did not disturb the production personnel who labored over *Simulated Combat Missions* for, in fact, it gave evidence that their mission had been accomplished.

Other Navy films using these new techniques and reaching into wider fields are currently under way. But the two chief progressive contributions of *Simulated Combat Missions,* (1) integrated training and (2) audience participation, would seem capable of application to training problems of every type—everywhere.

★ ★ ★

Value of Training Films

★ Beyond all doubt, Navy experience has demonstrated the value of motion pictures in the training program.

It has been found that proper use of training films strengthens and shortens training, both with forces afloat and in classrooms ashore. As a result, the Navy has developed an extensive program to serve its training needs.

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NIGHT VISION:

(Continued from page 69)

means of animated cross-section drawings, the functioning of the day nerves and night nerves of the eye. The vital importance of night vision to pilots in combat is stressed in a short dramatic opening incident to arouse interest. Thus, while not as convincing as the trainer, the film has the advantage of greater variety and flexibility.

Another RCAF night vision trainer, the three-dimensional target trainer developed for bombardiers and for pathfinder and intruder pilots, has greater photographic possibilities than the silhouette device, as well as considerable pertinence for the Pacific war. This trainer consists of a simulated coastal strip, with town, factory and field areas, set in a tank of water, representing the sea and a river. Here again, in dim starlight, the observers at first can only make out the contrast between black and water and lighter coastline. Then the white bridge over the river, white roads, an airstrip and groups of white buildings can be seen. Finally the details of the houses, fields and factories and dark roads are visible. By changing the elevation of the "moon," or light source, the altered shadow patterns cast by various objects in moonlight may be studied, as well as the appearance of reflections from both still and rough water surfaces. Flare patterns are simulated by the use of vari-colored lights.

Difficult Film Problem

The first versions of the script for the film included this night target material. A large terrain model, especially designed for photographic purposes, was constructed. Experiments were conducted on the technical problems of lighting the model to simulate various conditions of moon and starlight. Eventually this portion of the picture was cancelled, and the film was limited to two reels on dark adaptation, off-center vision and night scanning technique.

The night effect aerial photography proved difficult. Basically the same problem was encountered with the camera as with the eye itself in achieving simple contrast perception. Preliminary experiments with infra-red film showed that the sky background had to be a deep tropical blue, with high white cirrus clouds to provide contrast. Three conditions were required: the dark sky, the darker plane silhouettes and white clouds to make the darks look really dark and not gray. It was found that a hazy, milky bald sky, prevalent even on clear days in the middle Atlantic states, gave two flat tones of gray, the gray plane blending off into the gray sky.

Limitations of Weather

Unfortunately it was not possible, for budgetary reasons, to perform aerial photography in the tropics. Out of sixteen days of aerial shooting, in the Chesapeake Bay area, only one fulfilled the requirements for acceptable night effect photography. There were no clouds the remainder of the shooting time. Some contrast was obtained by painting the planes an "off" shade of gray. Under these conditions, the photographer had to depend on highlights for his contrast. This was a source of great distress to the night fighter technical adviser, who reiterated time and again that a pilot sees only silhouettes at night, not highlights reflected from a strong light source. On the second to last day of shooting, blue sky and high cirrus clouds rewarded the patience of the producers. The majority of authentic night effects was obtained in less than two hours of photography. But it was uphill work.

Shades of Darkness

What makes black appear black was further illustrated in the studio. The problem was to indicate approximately what the eye sees at the various stages of dark adaptation, using silhouette photo-murals of an airstrip. One photo-mural consisted of three dark hills in the background with planes and observation tower in the middle ground. The hills looked gray, so the scene painter retouched them. The results were still gray. He painted in dark clouds with even more dismal results. It was only when white clouds were placed in the sky that the gray hills began to look black.

One of the technical consultants on the project, Dr. Selig Hecht, of Columbia University, an authority on night vision, compared these experiments with the functioning of the eye itself, not only at night but in daylight as well. Contrast is the very essence of sight. Carbon black, for example, a base for black inks and pigments, looks extremely black by itself. Compared to lamp black, or ivory drop black, both darker substances, carbon black appears gray. Similarly, the painter does not use pigments on his canvas of the same value as the colors to each other and thus to simulate what he sees in everyday life. The total effect consists in the interaction of light values. Contrasts of light values provide the primary datum of vision. Light contrast is important also for the interior decorator, and the dressmaker. The decorator thinks of the shade of paint on a wall in relationship to other harmonizing and complementary colors in the room. Light values, therefore, are relative and interrelated. The best way to make something look black is to contrast it with some white in the same scene.

Making Theories Work

These observations are not original, of course. They can be found in any textbook on physics or optics. But in their particular application to night flying and to making films in low key they become absorbingly complex. There appears to be no satisfactory simulation of reflected light in the night sky, either in a synthetic trainer, or in a motion picture. A pinpoint light source in a three-dimensional target trainer omits the reflective capacity of the sky, which always has

considerable light in it. The water is black in the trainer and the shoreline light. Actually, on some nights, with lots of reflected light in the sky, the reverse is true. Considerable research remains to be done on this subject.

A portion of the film, which became increasingly complex as it developed, was the eye animation describing the mechanism of dark adaptation. Only a few physiologists understand clearly the chemical changes that occur in the visual purple which enable the rods, or night nerves, to respond to low levels of illumination. The simplified explanation in the film on night vision for airmen is not entirely accurate scientifically, but it will suffice for Naval pilots and aircrew.

Now that the picture has been completed and a 35mm print made which is dark enough to suit night fighter pilots, a final problem has arisen; making 16mm prints. Projection facilities on carriers and at advanced bases, where the film is to be shown, are far from ideal. Unless great care is exercised in processing, the audience will miss half the story. That's the penalty for trying to make a picture on night vision!

16mm War Bond Films!

★ They are also weapons which speed victory: for your country's sake offer your projector and urge use of these films. *See your 16mm State Chairman today. See page 11 for complete listing.*

Briefing first carrier-based Marine fliers. Members of a Marine fighter squadron sit in on a "hot dope" session (where visual aids play an important role) in their carrier's ready room. Instruction preceded strikes on Formosa.

THE CONTRIBUTION OF COLOR TO NAVY FILMS

(Continued from page 61)

ship titled *Rules of the Nautical Road* uses color to identify visual day and night signals.

Due to limited experience and facilities, optical effects are not as easily obtained in color as in black and white film. The Training Film and Motion Picture Branch often considers the instructional advantages of color well worth the extra effort required to surmount laboratory problems. These limitations of 16mm color production sometimes encourage the use of simple, authentic, direct visualization factors which are among the essentials of good training film production.

Who decides whether a training film is to be produced in black and white or in color? The requesting authority, the technical adviser and Training Film and Motion Picture Branch officers agree upon the medium that will result in the most efficient training film. The medium of color is chosen when the effectiveness of the Navy training film can be improved by its use.

Color is making an important contribution to Navy training films by overcoming the limitations of monochromatic photography. It is conceivable that in time, black and white films will be as old-fashioned as silent films are today.

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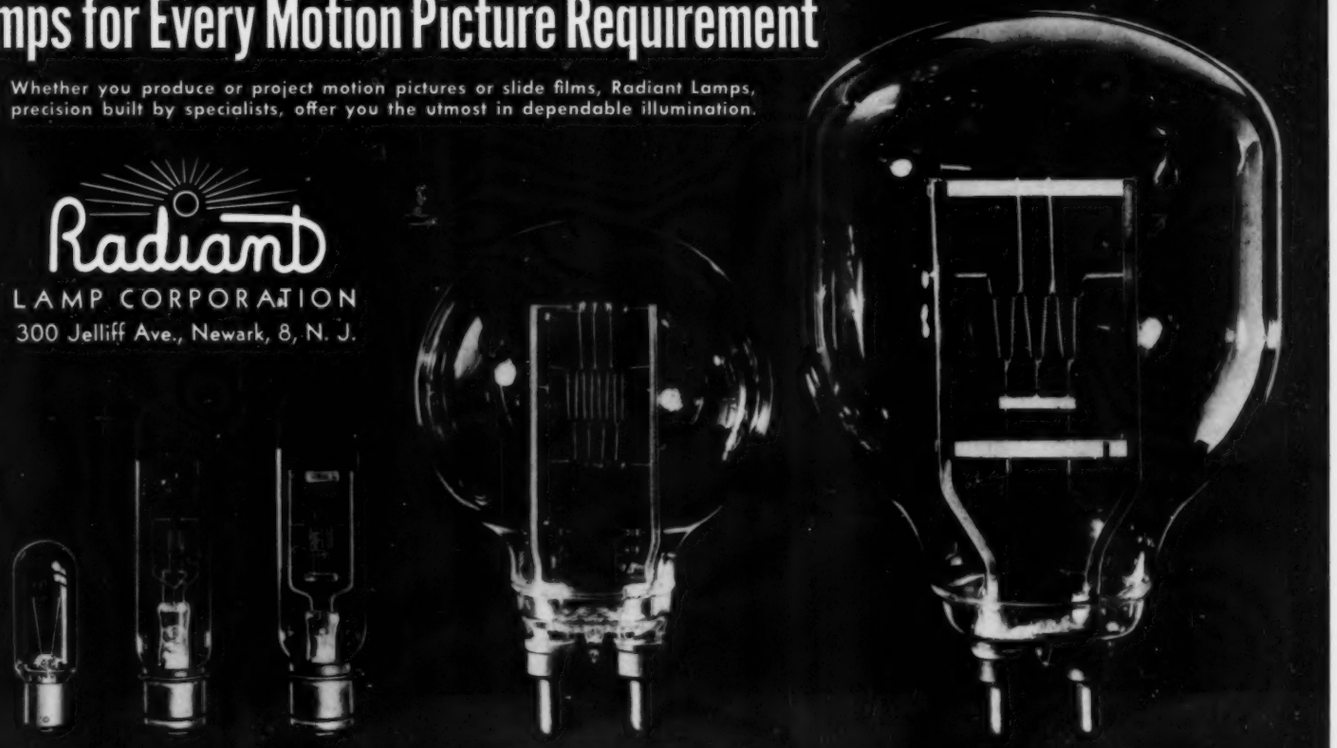

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COAST GUARD FILMS

(Continued from page 51)

might be fully and promptly utilized, it was necessary that the Training Division at Coast Guard Headquarters provide motion picture and slide film projectors, and all other accessories necessary along with explicit instructions for their effective use.

In the training of the men who fought the first world war, training films as such were non-existent. In the next two decades such teaching aids had gained a substantial foothold in the nation's general educational field, and to some extent in the military services, but there was as yet no large body of teaching personnel thoroughly conversant with the new techniques which the use of such aids made necessary. The adoption of training films provided the Coast Guard's training division with certain distinct advantages, but it also imposed obligations of a substantial nature. Films greatly facilitated the standardization of instruction, for being prepared under the direction of headquarters, they were directly keyed to the master plan of instruction. They brought about a standardization not only as between the various training stations but as between the individual instructors. Film aids also improved the morale of the newly created and rapidly expanding teaching staff, for they provided a substantial nucleus around which the various class sessions could be built. Variation in the scope and quality of instruction was greatly reduced by the use of films, for with them the instruction always covered the same ground and crude illustrative material created by instructors on the spur of the moment was eliminated.

New Techniques Found

There was at first, however, a great lack of understanding of the proper use of films as teaching aids, resulting frequently in training aids being ignored completely. This necessitated the initiation of a campaign to popularize the training aids. A thorough job in this field could not be done for lack of personnel, but the situation was such that there was constant improvement.

During the process of developing a training aids program, of utilizing the material made available by other agencies and services, of making special films of its own, and training its teaching personnel to properly appreciate such material, the Coast Guard was also developing new techniques in the use of such material. Studies were made to determine the most effective combinations of motion picture film, slide films and the spoken word of the instructor. The now familiar functions of the motion picture film of showing "what was to be done" and of the slide film in showing "how it was to be done" were crystallized into a standardized procedure. From the early experiments, and from months of practical experience, there emerged the integrated kits of teaching material, motion picture and slide films of the various subjects, so packaged that related material was received together and constituted a "course."

The extent to which training aids, particularly motion pictures and slide films, were used at the height of the training program is somewhat difficult to determine. But averaging all trainees and all the training activities, it is safe to say that each man and woman while in training got the benefit of at least one film per day. There was hardly a single subject in which personnel of the Coast Guard—both men and women—had to be trained, that didn't lend itself to presentation by means of films. The subjects so taught were therefore as diversified as the activities of the Service itself, varying from indoctrination to the most advanced subjects such as navigation.

Special Needs Served

As the film program reached the height of its development, the Coast Guard was using a large number of films produced by the Navy and the Army. It also had a great many films planned and produced by its own staff. The Coast Guard-produced films were chiefly on subjects peculiar to the service and which had not been adequately covered in training films prepared by other services.

Among the subjects which were more typical of Coast Guard training than that of the other services were the handling of small boats and lifesaving gear. This included the operation of surf boats, line-throwing guns and breeches buoy equipment, and the Coast Guard method resuscitation drill. In these fields the work of the Coast Guard has always been preeminent. Films were also produced on the use of lighthouses, radiobeacons, lightships, fog signals, and buoys in navigation and piloting, the Coast Guard's technical personnel responsible for the establishment of these aids being available for consultation. Nautical rules of the road, including lights on vessels and whistle signals, was another subject, on which it was quite appropriate that training films should be produced by the Coast Guard, for such matters are embraced in the marine inspection

WANTED

Experienced movie man who can organize, produce and handle distribution of long-range educational and institutional film program. Position open covers complete handling of extensive internal and external program by a large, well-known national organization. Give full experience, age, photograph and present salary. Inquiry will be confidential.

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functions of the service.

The Coast Guard not only developed for itself a very extensive use of film material in personnel training, but it contributed a great many films to the general wealth of military training material. It took an important part in the development of techniques for making and using films in effective teaching programs, among which was the practice of adding question and answer sequences to films. Many of the practices used by the Coast Guard were adopted by other producers of film material, and contributed to the general good.

Training film production activities of the Coast Guard were terminated pursuant to a directive of 10 March, 1944, which placed this work with the rest of Navy teaching film production in the Training Film and Motion Picture Branch of the Navy's Bureau of Aeronautics. Coast Guard activities can now obtain all types of training films from the training aids libraries of the Navy in each of the Naval districts. All training films made originally by the Coast Guard are likewise made available to all the armed services.

The work of the Training Aids Section of the Coast Guard's Training Division is now very largely restricted to the promotion of the use of training aids, to facilitating the distribution of available material, and to determining the techniques best suited to its own special needs.

Wave Workout

by Lieut. Robert T. Furman, Jr., USNR

TWO color pages of pulchritude appeared in a recent issue of COLLIER'S. They make the point that the production of Navy training films is not all a matter of procedures, distribution methods and production problems. Some assignments contain the elements of real pleasure.

Make-Up from the Neck Down is the title of the two-reel picture from which these production stills were taken. The objective was to give the WAVES a package of exercises which could be done in ten minutes a day, and (this was the real problem) to sell them the idea of doing the exercises voluntarily on their own time. Considering that the average WAVE has precious few minutes to herself and that, like most women, she considers physical education the work of the Devil, it seemed like a next-to-impossible assignment.

The producer used that old advertiser's standby, the beauty appeal. The narration began, "Sure you're busy. Who isn't these days? But you still find time to fix your face. You still find time to put your hair up in pins. Sure you do! But what about your figure? Big hips and a bulgy tummy will prejudice your public just as surely as a poor make-up job, maybe more so. What are you doing about that department?

The approach must have been right. According to actual count, every WAVE in the Training Film Branch who saw the approval screening of the film, took the exercises. It's now one of the most sought after of all WAVE pictures. *Make-Up from the Neck Down* was not only a pleasure to produce, it also promises to enhance the view from where we sit.

You ought to see it, some day.

A glamorous WAVE does her bit in *Makeup From the Neck Down*.

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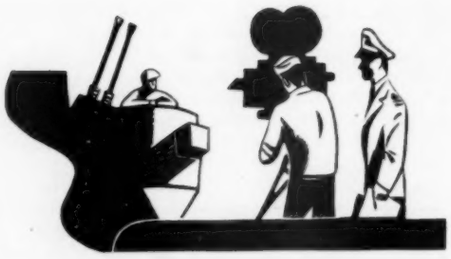


★ PROJECTORS and the essential accessories of film presentation such as screens, splicers, etc., have also made their contribution to the Navy's training program. From the workshops and laboratories of the visual industry have come the training devices such as gunnery trainers, and other audio and visual devices which have revolutionized training methods.

In the projector and screen factories of Chicago, of Davenport, Rochester, Camden and Indianapolis there have been produced thousands of 16mm and 35mm sound motion picture projectors now serving on the ships and at the shore bases wherever the Navy fights and trains around the globe.

GUNNERY TRAINERS OUR SECRET WEAPONS

Throughout the early months of the war, the ingenious synthetic gunnery trainers developed in the designing rooms of such companies as the Jam Handy Organization, Detroit, and produced by the Ampro Corporation and the DeVry Corporation in Chicago, were one of America's real "secret weapons." For aircraft gunners as well as for anti-aircraft defense, these trainers have performed their training missions with such success that commanding officers have placed them among the foremost contributions to the accuracy and consistency of our gunners.

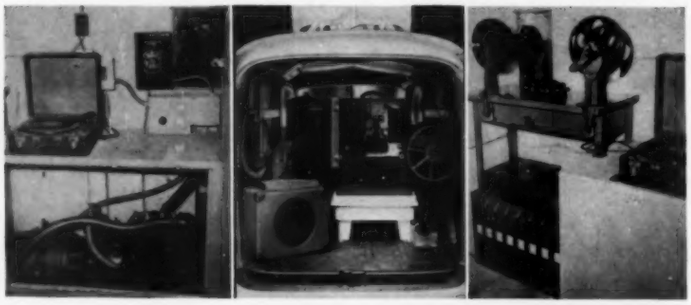
AERIAL CAMERAS ANOTHER CONTRIBUTION

Gun cameras mounted on swift fighter planes working in synchronization with machine guns have helped record the accuracy of our aerial marksmen. Bell & Howell, among the optical industry leaders in furnishing fire control and other devices, made an enormous contribution to this program as well as in supplying 16mm sound projection.

Similar contributions from Victor Animatograph and RCA have brought other thousands of 16mm sound projectors into the services, including the Navy, and thus to installations throughout the world. Similarly, DaLite and Radiant Screens as well as untold thousands of S.V.E. and Spencer projectors of all types are in use throughout these training programs.

Eyemo's and DeVry's filmed the war from the Arctic to the African deserts. Britain's famed *Desert Victory* and countless other war films were "shot" on cameras fashioned by the men and women of the visual industry. These "weapons" of war brought new ideas into strategy as well as taking the battle scenes to the home front.

DEVRY POSTWAR VISUAL SELLING ALSO TO BE MOBILE



Auto Trailer Ready for Postwar Needs

★ Immediate adoption by DeVry Corporation of postwar sales plans built around the use of a trailer-housed sales demonstrating units is announced Thus, DeVry, postwar selling will be mobile as well as visual.

(ABOVE) AUTOMOBILE TRAILER BODY as designed by DeVry for use in postwar selling and servicing of DeVry motion picture sound and related equipment to schools, industries, churches, agricultural groups and other outlets. (Left) Built-in generator to provide independent power for projection and sound amplification. (Center) DeVry 16mm and 35mm projection and sound amplifying equipment as used in standard audio-visual mobile unit. (Right) Complete film laboratory facilities for on-the-spot film servicing.

This unit is equipped to give demonstrations of all type of audio-visual teaching and training equipment in remote rural areas as well as in urban centers. Among users of this type of equipment already built at DeVry's direction are many foreign governments.

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LOOKING BACKWARD

(Continued from page 80)

for the first time, motion pictures and slide films were charged out like books, for home use or use in the library. Arrangements for viewing the silent filmstrips were very simple, consisting of a few projectors on a table facing small white screens separated by partitions. For individual study of sound motion pictures, sound slidefilms, and recordings, there were several small soundproofed booths. There were also six small self-contained projection units 16" x 20" with very small screens and individual earphones. Students sitting side by side viewed different motion pictures without disturbing one another.

These individual projection classrooms and library and home facilities caused the disappearance of central projection rooms and auditorium screenings of most types of EDUCATIONAL pictures. The success of the specially designed projection classrooms caused the conversion of all classrooms into projection rooms. In the conventional classrooms with windows, electrically controlled plastic darkeners were installed together with soundproof housings for the projectors.

PLANNING

★ The return to the schools and colleges of thousands of trainers and trainees habituated to visual techniques caused a rapid expansion in the academic use of projected pictures after World War II. Curriculum committees definitely provided for the use of motion pictures and indicated the content of the films which were planned in series to meet specific needs. The general pattern followed the units produced under the auspices of the U. S. Office of Education and certain armed service units, which consisted of a teacher's manual, a sound motion picture and a correlated silent slidefilm. Sometimes the material in the manual was also placed in the first part of the film for the use of the instructor. The illustrated lecture type of film was supplemented by appreciation, development, discussion, skill-building, direct participation and other types of films. Visual aids were integrated with daily lesson plans calling for debates, socialized recitations, projects and so forth. Semester lesson plans indicated when the various visual aids were to be used. Specialized research groups for motion picture planning developed about this time. They made use of refined research techniques based on the program analyzer system and photographs of audience reactions.

PRODUCTION

The producers of educational films depended to a large extent on the degree to which subject matter could be standardized and the consequent size of the market. The producers proved to be the commercial film companies, educational foundations, trade associations, corporations, labor unions, federal and state agencies, colleges, universities, city school systems, individual schools and teachers and textbook publishers. Devices for overt participation were built into films. Motion pictures and slidefilms began to include direct questions which greatly enhanced their effectiveness. Sound slidefilms greatly increased in popularity, and all types began to be custom-made to meet the needs of particular learning situations.

DISTRIBUTION

★ Although in this year 2000 it seems hard to believe, it is true that at one time large distributors sold or rented films in every field. At the same time, individuals or firms with a few films attempted to distribute their meager product to all. No specific date can be ascribed to this development, but by 1977 a considerable number of specialized film distributors had developed, and today they constitute the majority of distributors. Also, by 1977 film costs had become so low that most schools owned rather than rented films.

On the school side, audio-visual directors of individual schools met frequently with city or county supervisors to make known their visual needs and the desires of their individual teachers.

USE

★ The widespread present use by all teachers and students of projected pictures from elementary school through college did not come about until colleges of education began to use visual aids regularly in all their courses. By 1948 required courses in "Basic Visual Education" began to come into vogue. These dealt with the operation of all types of projectors, simple camera techniques, maintenance, organization of a student projection squad, and the often violated but simple tenets of proper educational use of projected visual aids. In the required advance courses, students became familiar with the literature of their specialized field through actual screenings of the material available and learned the techniques of selection, evaluation, and integration. Doctors' theses began to be offered in the motion picture medium. Instead of writing articles on matters of professional interest these visually trained teachers began to prepare visual aids such as slidefilms and began to circulate their ideas on microfilm. When student teachers did their practice teaching their instructors made sound motion pictures of their lessons, just as athletic coaches make motion pictures of their runners and swimmers for self-analysis and improvement.

This extensive use of visual aids did not displace the textbook but the superior clarity of screen explanations—with their peculiar attributes of slow-motion, time-lapse, animation, magnification and reality significantly affected the format of the textbook. For example, in connection with sound slidefilm showings, students began to be supplied with textbooks containing on the left side five of the photographs, drawings and diagrams from the visual aid, one under the other, and on the right side, the accompanying narration. This dual verbal and pictorial presentation was far superior to the crude, verbose, unillustrated textbooks of the past century, and made for greater in-

(Continued on page 119)

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Paul L. Brand, 816 Connecticut Ave., Washington 6, D.C.

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Stark Films, 537 N. Howard St., Baltimore 1, Md.

MASSACHUSETTS

Jarrell-Ash Company, 165 Newbury St., Boston 16, Mass.

Visual Education Service, Inc., 116 Newbury St., Boston 16, Mass.

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A. H. Rice and Co., Hollis, N. H.

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Ideal Pictures Corp., 915 S. W. 10th Ave., Portland, Oregon.

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LOOKING BACKWARD

(Continued from page 117)

tegration of individual and group study and much higher academic achievement.

Concurrently, business and industry made increasing use of visual aids in their own training program. One interesting development of World War II was the recording on slidefilms of machine tools, jigs, fixtures and gages to visualize operation sheets and blueprints. The application of this idea in peacetime manufacturing is one small factor in our present high standard of living. Another interesting development was the inclusion of technical slidefilms in the sale of consumer durable goods, such as refrigerators and vacuum cleaners. Their purpose was to aid the consumer in proper maintenance and the making of simple repairs. This widespread practice has not resulted in the elimination of the serviceman, but has increased public interest in the care of equipment.

In the early 1950's under the auspices of a leading educational association a central distributing organization of a non-profit nature was developed to handle the mass of good material produced by individuals. Also, under the same auspices, there were developed specialized groups of classroom teachers who used new visual materials with their own students and then published detailed summaries and evaluations of them. And so, as we look back on the progress of the past fifty years in the achievement of world peace, high standards of living and the increasing attainment of democratic objectives we can give thanks that those in the places of decision made it possible for the powerful visual medium to play its full part in the perpetuation of "The American dream."

A FILM CHECK-LIST

(Continued from page 78)

in doing the benchwork.

In another film, one important point for the student to learn is the correct insertion of an electric plug. Small arrows on the plug and the receptacle are to be lined up to insure proper connection. On the screen, a hand is seen inserting the plug into the receptacle, but the hand covers the plug, the viewpoint of the camera is too distant, and is from the wrong angle to see the arrows.

As an inferior substitute for well planned camera work, the sound track states, "The plug is inserted with the arrow on the side near the large pin toward the arrow on the receptacle." We can't see the arrows, so we use 20 awkward words to tell what one close-up from a revealing angle would have shown far better.

Sufficient good camera angles to orient the audience to the problem, and to permit effective cutting, can be planned before photography is started, and important training points can be identified for the director and the cameraman in explicit camera directions. Close-ups and interesting and revealing camera angles are vital in training films.

How was the camera used in the last training film you screened?

Variety or Monotony

★ It may seem that monotony is hardly possible in motion pictures, but it occurs again and again. Monotonous pace in the picture or monotonous speech in the narration are ruinous to any training value a picture might otherwise have. One memorable example is an early film on storms in which scene after scene shows beautiful rolling clouds, rolling and rolling, while the voice, in even, musical tones, drones the narration.

Pictures can be cut with change of pace, can be photographed with variety in visual symbols. Narration can be delivered with change of pace, change of pitch, change of voice quality. Monotony is unforgiveable in any film.

Listen to the sound track of a training film with the projection lamp off; then, with the sound track off, run the picture only and study its variety of visual images.

Now is the time to turn every preview post mortem into action which will improve the next film to be produced. This check list can be expanded to provide a guide for improving training films. The next training film can be a better one.

* * *

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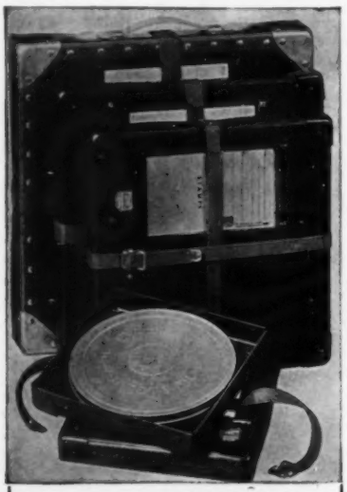

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TO THE NAVY'S PRODUCERS

A Final Word of Tribute to the Men and the Studios Producing Training Films for NAVY—

WHEN THE FINAL ENTRY is made in the log of war, those shining words of Admiral Dewitt Clinton Ramsey which preface this issue—*well done!*—will remain a long-cherished memory to the producers and processors of Navy training films to whom the bulk of physical production effort has been so successfully entrusted.

Well done—for these are the films that helped shorten the road to victory, the training subjects which have saved countless lives through a better means of presenting the complex facts of modern war to the greatest fighting forces ever assembled. These are the films which have been speeded to the far corners of the earth by courier planes to help change the destiny of mankind by a new means of mechanized attack or defense shown in unfailing clarity by training films.

Secret and confidential most of these training films are and so they must remain in these pages. The nation's security demands that hundreds of the finest subjects, involving new techniques and great production ingenuity, must remain nameless. Here was a lesson learned by these companies in their years of service to American industry: *security of plans and programs* that has been continued in these war years.

But their names will not remain anonymous and films such as Caravel's *Chemistry of Fire* program, Sound Master's *Pontoon Series*, the countless contributions in production, service and special devices of the Jam Handy Organization, the great picture series from Wilding, Audio, Loucks and Norling, Burton Holmes, Tradefilms, Pathescope Transfilm, Willard, Bray, Ray-Bell, Chicago Film, Escar, Roland Reed, Rockett, Photo & Sound, Calvin, Kerkow, Ted Eshbaugh, Visual Training, Springer, DeFrenes, Vocafilm, Cinecraft, Business Films, Sutton-Malkames, and others of distinction in the specializing field of industrial film production will long be remembered.

Men like Walt Disney, Fred Ullman, Jr. of Pathe, Louis DeRochemont, Walt Lantz, George Pal and studios like Columbia, Warner's, Twentieth-Century-Fox and R.K.O. brought their best to the art of the Navy film program. These elements, welded together by the officers and men of the Navy Training Film and Motion Picture Branch, gave ample testimony to the excellence and interest of these programs.

A Ted Eshbaugh animation sequence for the Navy training film *Aerial Gunnery* which shows a scale model design.

On Navy Training

★ *Miracles of quick learning have been achieved by the Navy with the use of films. New economies in teaching and new ways of clarification have been discovered that undoubtedly will have a lasting effect on education.*

Yesterday's teacher was trained only in the use of the printed word and laboratory apparatus. Today's teacher, in addition to these basic tools, has in radio and the motion picture two powerful new assets. Tomorrow's teacher will have television and other equipment that we can not even imagine today. But whether the teacher of the future with all these opportunities to enhance his teaching will be more effective than his predecessors depends entirely on the teacher himself. It is education's task, then, to train good teachers, and as part of their training to teach them to use radio, films, television, and other new media with skill and imagination.

—Lyman Bryson,
Director of Education,
Columbia Broadcasting System.

Miracles of Production

★ When the Navy asked for a movie shot, it didn't always advise a producer that the object to be filmed was not in existence. PATHESCOPE CO. OF AMERICA was asked to make a picture on a pre-stressed concrete tank—and in a hurry. But there wasn't a tank in existence anywhere and they measure 50 to 100 feet in diameter. Solution: A tank one-sixth that size was constructed, and bands were attached to the ends of the tank. By shooting at various times of the day, the illusion of the full-size tank was created. A scale model was superimposed on a shot of the original site for the tank, and the final production met all Navy requirements.

★ Frank Speidell, president of AUDIO PRODUCTIONS, notes that producers have had to overcome problems which would never have arisen in normal peace-time production. As fast as a good man was developed to where he could carry on his own assignment the draft board would often swallow him up. Of course, equipment shown in the films was scarce. Almost every subject required a ship, a plane or a gadget which was also needed directly in pursuit of the war. And weather! The Navy, like the farmer, operates without a roof over most of its operations. Despite all handicaps, Audio production staffs assisted in the making of some of the best of the Navy's technical training programs.

(Above) Producing the *Pontoon Series* (see story) technical advisor goes over script with Sound Masters crew.

"Slickest Trick of the War"

★ To SOUND MASTERS goes the credit for making 25 reels of Navy Training Films on Pontoon Gear which might well have aided in achieving a turning point in the war. The Navy knew that it would have to disembark men and materials at many extremely shallow beaches. The Nazis at Sicily, Salerno and in Normandy, and the Japs at Kwalajalein, the Marshalls, Saipan and Leyte thought they had us licked at these points. But they did not know the resourcefulness of Captain John M. Laycock, Navy designer of the pontoons; the Navy's Seabees, who had to assemble the box-like pontoons into barges, wharfs, bridges, drydocks and a dozen other strange shapes; or of SOUND MASTERS, whose job it was to quickly provide the training films for flight to a Seabee battalion that paved the way for our recapture of Guadalcanal. In THE SATURDAY EVENING POST, the assembly and operation of these pontoons was called the "slickest trick of the war," but the remarkable production of this set of films at the Navy's secret East Coast proving ground, in 1942 and 1943, has also merited exceptional credit.

Springer's Staff Was Ready

★ Foreseeing America's entry into the war almost a year before Pearl Harbor, SPRINGER PICTURES lost no time in preparing for the tough job of producing Navy training films. The company sent one of its script writers to Florida where he took a complete course in navigation at the Pan-American Airways Training School.

The Navy's "bible" on navigation and nautical astronomy was revised in conjunction with the series of films which Springer made under the joint supervision of the Bureau of Aeronautics, the Bureau of Naval Personnel and the U. S. Naval Academy. Many illustrations for the Navy's handbook were taken directly from the film production. This correlation between text and motion picture was particularly helpful to Navy students.

One of the *"slickest tricks of the war"* the miraculous pontoons, goes into action at a distant Navy base.

Miniatures for Training Films

★ A recent WILLARD production for a Navy training required a sequence on a near collision between a destroyer and a freighter. By using exact miniature replicas of the sea craft, mounted on trucks which fitted tracks on the bottom of a twenty-five by twenty-five foot tank, with the models propelled by wires underneath the water, a satisfactory illusion was created through real ingenuity on the part of the producer.

The effect of a wake was obtained by the combination of air and soap foam pumped to the models through flexible rubber tubing that was played out to the models as they moved through the water. All scenes were filmed as if viewed from the bridge of another destroyer. Having the camera propelled in a gondola mounted on a truck fitted to the tracks at the bottom of the tank, the course of the moving ships was constantly followed. The illusion of rain, hurricane and night had to be preserved. Nujol spray made the gusts of fine rain. Water three feet deep and dyed a deep purple was agitated to produce miniature waves. The whole action was filmed at a speed of 120 frames a second.

Willard was also the producer of the WAVES picture described on Page 115 of this issue.

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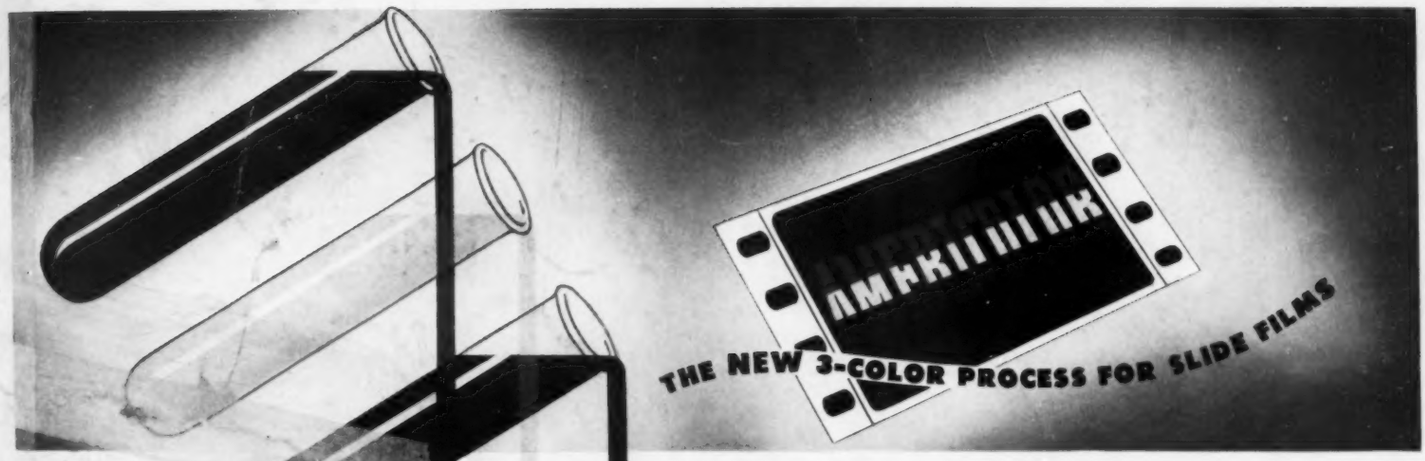

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